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THE

NATURALIST;

A POPULAR MONTHLY MAGAZINE,

ILLUSTRATIVE OF THE

ANIMAL, VEGETABLE, AND MINERAL
KINGDOMS.

CONDUCTED BY

THE REV. F. O. MORRIS, B. A.

THE ENTOMOLOGICAL DEPARTMENT BY

C. R. BREE, ESQ.

VOL. VIII.

WITH ENGRAVINGS.

O LORD, how manifold are thy works! in wisdom hast Thou made them
all: the earth is full of Thy riches.—Psalm civ., 24.

L O N D O N :

GROOMBRIDGE AND SONS, PATERNOSTER ROW.

M DCCC LVIII.

THE NATURALIST.

ON THE NATURAL ORDER OF ANCIENT GEOLOGIC ORGANISMS.

BY F. M. BURTON, ESQ.

EVERY student in zoology, who has at all examined the systems of our great naturalists in the past and present time, is doubtless at first invariably struck with the want of a pure classification of the Animal Kingdom, that will shew without fail the gradual increased development of one creation over another, in at least one important organism; and looking at the inconsistencies that prevail throughout nature in this matter, he is apt to think that the true classifying principle has not yet been discovered, that the master minds that have from time to time attempted to elucidate the secrets of nature, and to separate the true gold from the rock where it lies buried, our Cuviers and Owens have yet failed to find out the key which will give access to the whole, the one true principle of all organic created matter. He remembers that nature never recedes, and this is apt to confound him more, and further strengthens the belief he fosters, and then a spirit of inquiry is raised within him, and he searches deep into the works of those who have made zoologic development, as it exists in the present fauna of the earth, their study, but without getting nearer the goal. He then recollects that the whole world of organisms, as it now exists, is merely a portion, part decaying, part decayed, of one vast fabric of creation, which has been going on for ages, and then he takes a wider sweep, and endeavours to understand the link between ancient and modern cycles, as shewn in the geologic records of the past, and here he sees at last nature as a whole, and finds what man's wisdom has discovered, though failing in perfection, is yet worked out on true creative principles.

But to put the question in a more forcible light, let us take the several great divisions of the Animal Kingdom according to modern classification, and compare them one with another, and then let us mark how it is that we do not find the lowest class of one division higher in point of organic development than the highest of the last class, as, for instance, the Annelidæ, the lowest of the Homogangliate division, over the Echinoderms, the highest of the preceding Nematoneurose division. The answer to this, when

viewed by the experienced eye of the advanced geologist, is obvious.

In the first place it must be borne in mind that it would not be necessary, from local causes, that the lowest class of one division, and each tribe of animals, should in all respects be more fully organized than the highest preceding lower class or tribe, because the development of one or more organisms would entirely depend upon the circumstances of life in which each animal is placed; the inhabitant of the water, for instance, would not require certain senses and organs so highly elaborated as those of another species whose habits were terrestrial, and *vice versâ*. But the chief answer to the inquiry lies in this, and the fact has been partly worked out and elucidated in the last work of one of our great geologists, whose end we all lament, that of "The Testimony of the Rocks," by Hugh Miller, who makes the simple statement that the various creations, so to speak, of the different divisions of the Animal Kingdom were an act of parallelism. Too much stress cannot be laid on this important fact. This is the key which will unlock the truth of advanced systems, and throw a light over the whole, when we come to consider that the lowest organisms with which we are acquainted were the first to be developed, and that, when the great Silurian sea was in being, with its muddy, slimy shores, the acritous animals held sway. True it is we cannot find traces of the remains of many, whose types of form we still are acquainted with in existing life, in the rocks where now their history is read, but the reason of this is apparent—their bodies were evanescent, and no more traces of them could have been left than of the soft jelly-fishes of our own shores, which, when thrown up by the waves, before the returning tide can reach them, are melted by the sun's rays, and disappear.

But were acritous animals alone permitted to live on those ancient shores? Nature, ever bountiful, and delighting in liberality, or rather nature's consummate Author, willed it otherwise. Co-existent with acritous development appeared also tribes of the great Nematoneurose, Homogangliate, and Heterogangliate divisions,—nature worked in parallels. Together with the bony secretions of Polyyps, we find Trilobites and Brachiopodous Molluscs, nay, from the soft nature of the lower orders allowing them to perish without an impress of their form, the latter kinds almost appear to predominate. And further, in addition to this divisional creative parallelism, it appears that in the four first kingdoms a certain parallelism also existed in the several classes composing each division, as, for instance, among the Heterogangliata; for, co-existent with low Brachiopods, we find imbedded in Silurian stone remains of the highest families of this division, Cephalopodous Molluscs, animals that approach the vertebrate world in type by the possession of the first rudimentary bony skeleton, though again we are confounded in our attempt to understand the creative truth by the light

of discovery, in the fact that the lowest class of the Heterogangliate division does not make its appearance till the tertiary system was being formed, in other words, not for numberless unreckoned ages after the highest Molluscan genera had been called into being.

But all this, it may be urged, does away with the six days of creation, either as literal or prophetic periods. No such thing; nature's own testimony, engraved in ancient rocks and cliffs, is to the contrary; any tyro in geology knows to the contrary, and can tell you that great eras of development were elaborated in successive periods of the world's history, that, notwithstanding the appearance of lower orders of the higher animal divisions during the acritous sway, they were merely the forerunners of a nobler world afterwards to be perfected, and that the successive but continuous deposits of the Silurian and other systems, speaking of them as periods of time, were the eras of greatest development of different tribes of animals.

And when, it may be asked, did the last and highest kingdom appear? Its creation began in the days of the Upper Silurian age, when water prevailed over the surface of the earth, when the coral of acritous Polyps was in a high state of formation; it began with the lowest class of the vertebrate division, tribes which alone could live in that watery age, when higher genera would, like Noah's dove, have found no rest for the soles of their feet, an age adapted entirely to fishes; and afterwards, when the dry land began to appear, in the time of the uppermost deposits of the old red sandstone, then those great monsters, whose bony remains may be found imbedded in such numbers in our liassic and oolitic deposits, those

"Dragons of the Prime,
That tore each other in their slime,"

appeared with it. Truly nature never receded, but from the time when God first clothed the material world with life, till the day of perfection arrived, when He placed the pinnacle on the noble structure He had raised, and formed the spirit of man within him, and fitted him to serve and worship Him, nature never receded. God's work was complete, but it was left to man to recede. It is a beautiful fact, fully in accordance with geologic truth, that, when God had finished all His work, "behold it was very good," and that man, now, alas! so degraded, was good too, a fitting head to such an edifice. God formed him perfect, but from that original righteousness, from his high estate, puffed up with pride, and seared with ingratitude, man himself receded and fell; and I know not whether there is a more striking proof of the mighty foresight and wisdom of God than that, though He had made him perfect, and doubtless meant him but for his rebel sins to continue so, still, foreseeing the dire calamity of his fall,

He had, during the successive preceding periods of creation, so framed the crust of the earth, with its coal forests, its minerals, rocks, and soil, that it was at once ready for a fallen race, only requiring that labour to bring it out, that toiling sweat of brow to keep down the rugged crops of thorns and thistles, which was one of the merciful fruits of man's rebellious sin.

Uppingham, November 4th., 1857.

CHARACTERISTICS OF COMMON BIRDS.

BY O. S. ROUND, ESQ.

(Continued from page 223, Vol. vii.)

BIRDS, like other wild animals, are divided into classes pursuing various modes of life, each path exercising a manifest influence upon their manners and appearances, the search after food to sustain that life being the great motive power whereby their movements are regulated. Hence, whilst the graminivorous are walkers and runners, because their food is gotten on the earth, so the insectivorous are endowed with extraordinary powers of wing, and the aquatic birds are web-footed. But there is one class, which is, perhaps, the most limited number of all, which subsists upon nocturnal prey, and the reason for this is obvious, for nocturnal animals are likewise comparatively few, and in this, as in all nature, we find that all-wise adaptation of the means to the end that must strike the most unobservant at every turn in the pursuit of natural science. Almost all night-birds are garrulous, for although their ocular powers are far superior to our own, or that of diurnal creatures, for distinguishing objects during the hours of darkness, still, to a great extent, it is darkness even to them, and they cannot see each other at any great distance, and it is therefore necessary that they should have some other means of collecting their forces, or of knowing each other's locality. Thus, as we all know very well, Owls hoot and scream, Nightjars rail, and Stone Curlews whistle, and Herons, which are somewhat nocturnal, have a note approaching to a shriek, whilst the Bittern utters a harsh note like a trombone. Nay more, birds which are strictly diurnal, particularly water-birds, when they do move at night, which sometimes chanees, immediately become noisy, and for the same reason as I have above stated; and who knows but that, like many a youth-would-be-man who manfully starts to walk home across a common after nightfall, the silent darkness has not something awful and fear-inspiring even to non-reasoning creatures; and as he makes the air echo with his whistle, so they awake the stillness in their own way. It has been advanced by a divine of superior talents, who met an early grave from over-exertion in his sacred

duties, that darkness has, *per se*, a degree of terror in it, quite apart from associations of any kind, and here there is this strange anomaly, that, instead of fear prompting silence, it should produce garrulity, yet so it is.

The majority of our nocturnal birds are inhabitants of wilds, and the "lonely places of the earth," as if it was intended that their shrieks or wails should not trench upon the rest of creatures located in peopled districts,

"The Bittern's boomings, dissonant and harsh,
Wake only echoes from the dreary marsh;
And nature's ordering hand, for ever kind,
The Owlets' screams has to the woods confined."

This last observation, however, does not universally hold good, for there is not a plough-boy in agricultural places who does not know how sacred the Yellow Owl is held in the farm-yard, by reason of his mousing propensities. It is almost incredible, it is said, how many of the genus *Mus* fall into the clutches of these midnight hunters, and I have myself at dusk seen them watching, cat-like, at the foot of stacks for their prey, though how they are quick enough to catch them then I do not know, as I never saw the feat performed; in flying it is a different matter, of course. Most members of the Owl tribe are fond of the woods, but there is a handsome species which is as often found on commons; this is the Long-eared Owl, of which the hen is really a very large bird when on the wing, and it is probable that small rabbits and leverets are preyed upon by this bird, as well as young game; indeed this is taken for granted by sportsmen, although they would be puzzled to give any proof of the fact. This idea is easily kept up by gamekeepers, who get so much a head for destroying "vermin," and therefore, it is obvious, the more they can swell the number of luckless animals to be included under that general term, the better for them. The talons of this tribe of birds are of a very formidable description, and therefore it is obvious that there must be some use for them, which is hardly to be accounted for if we confine their prey to mice only.

It is a somewhat remarkable circumstance that the plumage of all night-birds should be so very much more downy, as to the quill feathers, that is, than that of day-birds, and Gilbert White and other naturalists assume that the purpose to be answered is the being thus enabled to steal unperceived upon their quarry. But the difficulty is this: are nocturnal animals more active than diurnal? or are nocturnal animals of prey less endowed with activity? I do not know that I can honestly answer either of these questions in the affirmative. Mice are certainly very quick in their movements, but it is in a limited space, and I don't know they are more so than ordinary wild animals. Then again, no doubt, the Owl has a clumsy appearance, chiefly from his large head, (which, by the way, owes much

to the feathers upon it;) and when we ordinarily see him, he looks dull and stupid; but you must remember that we see him under great disadvantages, namely, in the daytime, when his eyes are dazzled, and he is half asleep. But see him at night, as far as you can, and you will confess that he is indeed a different creature, active and full of energy, with the most expressive eye that can be imagined; in fact, his whole being is changed, and there is activity enough for anything. His flight is certainly very noiseless, and it may be that the very stillness of the dark hours makes every sound so distinctly and easily heard that some such provision is necessary. This I look upon as the most probable and true reason why there is this peculiarity, and also that nocturnal animals are generally very quick of hearing, probably from so much more depending upon this sense than can be the case with diurnal animals.

The large Owls, such as the Eagle Owl, seem to prefer open situations, and not only so, but those which partake of a marshy character; but the reason for this does not clearly appear, unless it be that the water-rat is there an attraction, but so it is.

Owls are very generally dispersed through the country, but it is not so with the Nightjar, which is essentially a moor-bird, and, as a general rule, never found in the cultivated districts, except such as abut upon wastes and commons. Having resided in a heathy district during many years of the early part of my life, I had very good opportunities of observing their habits, in which I took a great interest; and in support of my first assertion, my experience goes clearly to the fact that since cultivation has made inroads upon nature's wilds, the numbers of these birds have greatly decreased, and in some parts they have altogether ceased to return in May, as was their former wont.

The tribe *Caprimulgus*, or Goat-sucker, to which this bird belongs, is a very large one, and contains a vast number of varieties, chiefly to be found in America, and some bear a very strong resemblance to the Owl. Others we are familiar with the names of, through Fenimore Cooper, the transatlantic novelist, when he speaks of the note of the "Whip-poor-will," and the valley of the "Wish-ton-wish," both varieties of the Nightjar, if not one and the same bird, which I am not learned enough in American popular ornithology to determine. We know very well the ridiculous superstitions which have attached themselves to this poor creature, traceable back to the dark ages, and even now, I believe, held in some unsophisticated village districts, where old wives and tottering rustic sages shake their heads and predict ill-luck at the appearance of the sprite-like Evechurn, or Puckeridge, as they call it; more especially when there are young calves, or cows likely to become mothers. How hard it is to knock the veriest nonsense out of the heads of superstition and ignorance! It is not so long

since witches were believed in, and antidotes administered. I remember perfectly well hearing a Captain of Horse-guards tell a story, which would now be hardly credible. He was, (now many years since,) quartered, somewhere in the midland counties, upon a blacksmith, who had a sickly son, the said son's weakliness being commonly ascribed to the evil influence of a poor old woman in the village, who had the misfortune to be particularly old, ugly, and cross-grained—a not uncommon combination, the last being almost a natural *sequitior* upon the two former. This subject was discussed in the gallant captain's presence, but he could scarcely believe that the matter was treated seriously; but the sequel shewed that it was only too much so. For every evil there is said to be a cure, and in this instance it was considered that the infallible antidote would be that some member of the family should *draw blood* of the witch! but how was this to be accomplished without the intervention of actual assault and battery? Some ingenious person at last hit upon a device, which, alas! for the poor old crone, was but too successful. She was invited to tea, in the most (apparently) amicable manner, and accommodated with a rush-bottomed chair, where she had hardly "got comfortable," when a youthful scion of the blacksmith race being introduced surreptitiously beneath, with no other weapon than a cobbler's awl, surprised the poor old lady's leg in the most uncereemonious manner; the requisite antidote was, as may be imagined, quickly produced, and need I add, the hitherto sickly youth grew up a healthy man; but this last was the blacksmith's version of the matter, when he and the captain accidentally met in after years, and he related to him the above episode, which is so far incomplete that I cannot say whether the poor old woman obtained redress for her injury, or was punished for a witch upon such evidence—the more likely conclusion. If we believe such a thing as this, and I have no reason whatever to doubt that it took place, how can we doubt that a bird, known better by hearsay than by personal knowledge, having its movements involved in obscurity, and being capable of uttering so wonderful a sound for its size, should be invested with more than ordinary qualities.

(To be continued.)

NOTES ON CRUSTACEANS.

BY G. HODGE, ESQ.

ON reading "Notes on Crustaceans," by W, in the October number of "The Naturalist," it brought to mind numerous instances in which I had found Crabs with parasitic growths upon them, those that have come under my notice being *Hyas coarctatus*, a species unusually plentiful on this coast, amongst the rocks towards low-water mark. They are deci-

dedly gregarious, for I invariably find several in one pool, however small that may be. They seem to prefer the dark overhanging rocks containing deep muddy holes, and I have counted as many as eleven and thirteen in such a spot, when the pool has been no larger than an ordinary table.

W seems to incline to the idea that the fragments are first entangled in the hairs, take root, and gradually extend into the shell: now to me this appears a scarcely feasible notion, as it is generally held that these forms of life (*Algæ* and *Zoophytes*) must be regularly developed from spores and ovules. How then can a torn fragment take root and flourish? Those individuals of the Crab kind that have come under my notice, and they have been not a few, have given the preference to *Algæ* of a reddish brown colour, portions of which were nipped off and laid on the back and about the head, a careful examination of large individuals would also shew numerous minute growths springing up. I was much amused at the appearance of a fine large *Hyas*, which was stalking along, with all the majesty which borrowed plumes often produce. It was seen in a large deep pool, round the edge of which abrupt rocks stood out, affording a shelter for some very fine tufts of *Delesseria sanguinea*; well, this individual had established himself amongst the *Delesseria*, but noticing, no doubt, that the colours of his shell was an unpleasing contrast to the handsome weed, he proceeded to array himself with the desired covering; little bits, the tips of the leaves, were accordingly detached and stuck upon the carapace in an extremely irregular manner, giving the crab a most ludicrous appearance; and as I moved to the pool to get a good view, it merely stalked leisurely along, evidently quite safe. It is next to impossible for this delicate plant to grow from such fragments as here described, the tips of leaves.

Now having shewn that the covering is in certain cases mechanically attached, I will endeavour to prove that it is a regular work which the crab performs. My first acquaintance with *Hyas* was a small specimen found during one of my early searchings on the rocks. This, with the other captures, was put into an aquarium, but in four or five days I missed it, and doubted not that like numerous other animals it was dead, and therefore commenced a search, and soon found the remains, which I immediately removed, and instituted a further search to see that nothing else had shared the same fate, when lo! another *Hyas* was there, flapping away with his little brushes, no doubt wondering who I was that thus invaded his domains: now this completely nonplused me, as certain was I that only one had been put into the trough. Being young on the subject of aquaria keeping, I did not at first alight upon the idea that the supposed dead body was merely the cast-off shell; but as this slowly gained possession of me, the luxuriant growth of *Algæ* upon the newly-

cased article rather upset my faith in the idea, as the utter impossibility of a fine tuft of weed half an inch high, springing up in three days, was more than I could fancy. Taking the crab out and carefully examining it, I found the weed was not growing, being merely laid across and cemented in some manner, and on looking at the contents of the aquarium, I saw it had been taken from a large tuft under which I first found it. This weed could only have been nipped off, as there were no floating fragments; and further, the weed could not have been torn off, by the hairs being much too strong and healthy for that. There is a small specimen of the same class in one of my troughs, which has during the last few days varied his covering by a few bits of *Alve*, this plant being the principal vegetable part of my stock.

I therefore beg to suggest that although the coverings of many of these crabs are in a healthy state and growing, such growth is not the result of the first mechanical attachment, excepting in an indirect way, as any temporary attachment would eventually decay and die out, not before such secured germs might have escaped from them, and being received on the shell, there form root and flourish; still it is just as likely that those regularly rooted, make their appearance in the same manner as they do on the rocks and stones by purely natural causes, and at the same time it appears to be a wise provision of the Great Creator, that these defenceless creatures should, at their most helpless stage, (when they have just cast their old and hard shell for a new and soft one,) be able to frame a temporary covering and shelter for themselves, until time has elapsed sufficient for the regular growth of a more perfect and lasting one. I may remark that all that I have seen being littoral specimens were covered with *Algæ*, the *Zoophytic* growth appearing only to be found on those from deeper water.

Seaham Harbour, October 9th., 1857.

Entomology.

THE STUDY OF NATURE; AN ENTOMOLOGICAL PROEM FOR 1858.

BY THE EDITOR.

THERE are many impulses by which, unknown to ourselves, we become students of Nature. Perhaps the most common is that which springs from an instinctive and earnest love of the good and beautiful in the glorious world around us. It is a morbid and sometimes ill-natured view of the objects of our existence, which endeavours to chill the warm and enthusiastic feelings with

which the Naturalist regards the objects of his study. "The greatest amount of happiness to the greatest number," is the Benthamite dogma upon which philanthropists of modern days found their theories for benefitting mankind. To some, things sensual form the greatest means of being what they call happy. Manly sports, as the excitements of the ring and the turf, have charms for many. The love of money, the stern duties of a life of labour, even the contentions of party, small and great, include the aspirations of vast numbers after the desideratum of life—human happiness.

Turning from the sensual to the intellectual, the field opens still wider, and we make a great lift in the scale. The human mind is after all a wonderful and noble effort of Creative Wisdom. Divest it of its little and pardonable vanities, let it revel in the wide field of thought and reflection, develop its hidden powers, moderate its somewhat too lofty aspirations, and imbue it with the great truth that it is part of a responsible Being: and how glorious a picture can that self-same mind draw of its own position in the scheme of Nature.

Now of all intellectual operations the love of Nature is among the purest and the best. We will not disparage others, as the love of art—of science—of profound study—of oratorical display—of poetry or song—but we say among these, intimately wound up as it is with some of them, we rank not least, the Study of Nature.

It is our business, however, to confine ourselves here to that part of Nature which comprises the "World of Insects." Those gay, transient, often insignificant forms, which live their short day of life and then pass away for ever, leaving behind them records of their habits and instincts: a part of the Great Scheme it is the vocation of the Naturalist to unravel. And let not any one imagine that this is a trifling or a useless study. We have no sympathy with those who shrug their shoulders and cry *cui bono* to a pursuit which they do not understand. All science is useful as a means of education. A knowledge of insects has in addition other claims to our notice. One of the greatest discoveries of modern days—that of the reflex function of the nervous system—was perfected by the dissection of the larva of *Sphinx ligustri* by Newport and Marshall Hall; and many a poor sufferer who is treated with the knowledge which this discovery has added to the science of medicine, has reason to bless those who have thus studied the Physiology of Insects.

Entomology, as a popular pursuit, has the great advantage of being open to all classes of society. The poorest and most uneducated person can rig up a net, stick a piece of cork into a box, and become at once a "Student of Nature." We care nothing about such a one being termed a "mere collector;" his collection makes him happy, and the pursuit expands his mind, and gives him an insight into the beautiful works of Creation. "I am a poor man," writes one of our correspondents, "and have a family to support, which obliges me often to work from four in the morning to eight at night, after which I go into the woods to sugar for insects." Surely the pursuit must have many charms if it can produce effects like this.

We most heartily wish, then, a happy and prosperous New Year to all Entomologists, whether our readers or not; and we will conclude these brief remarks with the following quotation from the author of "Sea-side Studies," in "Blackwood's Magazine" for October last; a writer whom we predict will rank high among the first Naturalists of the present age.

"The Naturalist may be anything, everything. He may yield to the charm of simple observation; he may study the habits and habitats of animals, and moralize on their ways; he may use them as a starting-point of laborious research: he may carry his newly-observed facts into the highest region of speculation; and whether roaming amid the lovely nooks of Nature in quest of varied specimens, or fleeting the quiet hours in observation of his pets; whether he make Natural History an amusement, or both amusement and serious work, it will always afford him exquisite delight. From the school-boy to the philosopher, all grades find in it something admirably suited to their minds. It brings us into closer presence of the great mysteries of life; and, while quickening our sense of the infinite marvels which surround the simplest object, teaches us many and pregnant lessons which may help us through our daily needs."

"And of such truths
Each to itself must be the oracle."

LIST OF LEPIDOPTERA OCCURRING IN THE COUNTY OF SUFFOLK.

BY THE REV. JOSEPH GREENE, M.A., ASSISTED BY THE REV. H. HARPUR CREWE, M.A.,
AND C. R. BREE, ESQ.

[The portions of these papers contributed by Mr. Crewe and Mr. Bree, are signed with the initials C and B respectively. N.B. at the head of a paragraph signifies that the remarks are made after those of Mr. Greene.]

PART II.—HETEROCERA.

DIVISION II.—BOMBYCES.

1. *Euchelia Jacobee*.—Taken in this neighbourhood, but rarely. (B.)
Not uncommon at Woolpit, near Stowmarket, in the larva state. (C.)
2. *Deiopeia pulchella*.—Taken once by Mr. Levett in Finborough Park.
It was brushed out of a fir-tree close to a stream of water. (B.)
A pair were taken a few years since in the garden at Rougham, near Bury, by the gardener of Mr. Edward Bennet, and are in Mr. B.'s collection. (C.)
3. *Lithosia rubricollis*.—Very abundant at Playford. The larva, which is very subject to Ichneumonism, may be found from the middle of August till nearly the end of October, though, at this late period, it is nearly sure to be stung. It feeds upon various lichens, having, however, a decided preference to those growing on fir trees. In the "Manual" it is stated that all the species of this genus fly in the evening. *Rubricollis*

is, however, an exception, and the perfect insect may be seen in the noonday sun, swarming round the tops of fir trees with an undulating flight, not unlike that of *H. humuli*, ♂.

4. *L. quadra*.—Not rare at Playford. When at rest the folded wings will at once remind the ivy-hunter of *Vetusta* and *Ecoleta*. The larva is very handsome, and feeds upon lichens, preferring, I think, the oak. It may occasionally be seen after windy weather crawling up the trunks of trees; but the best way to obtain it is by beating, and the nearer it is full-grown the better the chance of rearing it: when bred it is a splendid insect, and grows to a large size. I have specimens in my collection measuring two inches and two lines. It is said to be "common" in "Westw. and Humph. British Moths," but I must entirely dissent from this statement.

5. *L. griseola*.—Very abundant: comes to light. The larva is lichenivorous, preferring poplars, but will also eat low-growing plants.

N.B.—I bred this insect July 10th., 1857, from pupa brushed out of oak. (B.)

The larva of this insect will feed freely upon sallow. I bred a pair a year or two since from larvæ entirely fed upon this tree. (C.)

6. *L. stramineola*.—Rare: two at light.

N.B.—I took two specimens at light last summer early in August. (B.)

7. *L. complanula*.—Very abundant: comes freely, alas! too freely, to light. The larva may be found on trunks of poplar, in company with that of *Griseola*. Both may be taken at night with the aid of a lantern.

N.B.—I have bred this insect from a larva fed entirely on crab. The larva of *L. griseola* and *complanula* are very slow in arriving at their full growth; though they are one-fourth grown now, (Nov.,) and hibernate, many of them will not be full fed till July. In appearance they closely resemble each other, being both black and hairy, with an orange stripe on the side. In *Griseola* this stripe is paler. (C.)

8. *L. helveola*.—Once at sugar last summer, June 18th. (B.)*

9. *L. aureola*.—Scarce. I used to beat the young larvæ(?) from fir trees in April, at Playford, but could never succeed in breeding them. The "Manual" gives the end of June and July as the period of its appearance in the perfect state; it must, however, often occur much earlier, as I have taken it more than once on the wing as early as the middle of May.

N.B.—Taken at Ringshall, near Stowmarket, by Mr. W. Baker, and at Woolpit, near Bury, by myself. (C.)

10. *L. miniata*.—Not uncommon. From the fact of my having always

* I did not find this insect at sugar myself. It was brought to me by my gardener, whom I had sent to the woods to sugar, and he took it with others. It was doubtless at rest on the tree, and not feeding; just as *C. ligniperda* is sometimes found.—Ed.

beaten the perfect insect from *alders* I am disposed to think that the larva must feed on the lichens of that tree, but I cannot speak positively, having never met with it.

N.B.—I have beaten this insect not unfrequently out of *oak* in Kent. I never saw the larva. (C.)

11. *L. mesomella*.—Not common. (B.)

12. *S. Irrorella*.—Not common. (B.)

I took the larvæ of this insect in great abundance in May, 1856, on the Hampshire coast. They are black, very hairy, and marked with yellow. They were feeding upon the ground lichens, about two hundred yards from the tide mark. I took them home, and having cut a sod, placed it in an earthenware pan, upon this I placed a quantity of lichen, and having turned in the larvæ, tied some gauze over the pan, and kept it as much as possible in the sun. As I was residing some miles from the sea, I was obliged to feed the larvæ with tree instead of ground lichens, but they did not seem to mind the change. I used to sprinkle the lichen with water nearly every morning. I reared a fine series of the perfect insect. In the wild state the larva, when full fed, crawls under loose stones or oyster shells, where it spins a very slight web, and turns to pupa. The perfect insect appears in June and July. (C.)

13. *Nudaria senex*.—Very rare. (B.)

14. *N. munda*.—Common, (B.)

15. *Callimorpha dominula*.—Rare. I met with a few larvæ last March, crawling about in the sunshine on Kesgrave Heath, but did not succeed in breeding them.

16. *Euthemonia plantaginis*.—Not uncommon in woods near Ipswich. (B.)

Some few years since, when at a private tutor's, at Matlock, I used to take the larva of this insect on the limestone hills in May. It is very fond of sunning itself. It feeds on *Poterium sanguisorba*, (L.) *Helianthemum vulgare*, (L.) and other low plants. It may easily be recognised by its half-red and half-black appearance. It feeds up half grown in the autumn, and hibernates. (C.)

17. *Arctia villica*.—The same remarks are applicable to this species as to *C. dominula*.

N.B.—Has been taken at Creting and Barham, near Stowmarket, by Mr. W. Baker. (C.)

18. *A. carya*.—Abundant of course in the larva state. Mr. Crewe and I made some experiments this summer upon this insect, namely, trying to breed some varieties by forcing the larvæ to eat some strong coloured flower, and not allowing them to touch anything else. What his success was I do not know: I failed entirely; I gave my larvæ wallflowers.

19. *Phragmatobia fuliginosa*.—Very abundant in larva state, feeding upon yarrow in September and October. It hibernates; it does not, however, feed in the spring, at least mine did not; I kept them in a box covered with a wire lid; at the bottom was a sod of earth, and on it I placed

five or six handfuls of loose moss. I left them in the open air, but did not expose them to rain. They spin up about the beginning of March, but do not turn to pupæ for a fortnight or three weeks. One of my pupæ produced a fine Hermaphrodite.

N.B.—I took a larva this day, Nov. 10th., snugly ensconced under the bark of a willow tree. (B.)

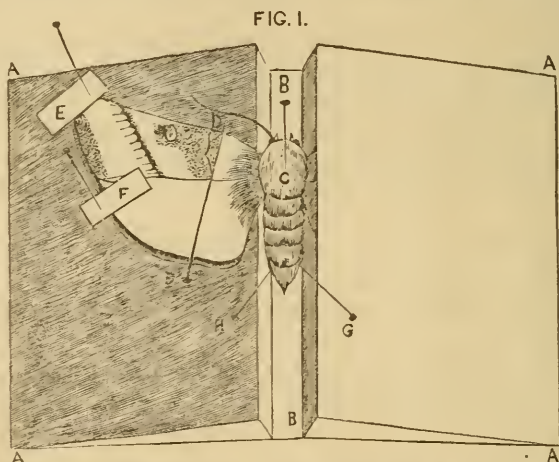
I am sure that this insect sometimes passes the winter in the pupa as well as the larva state, as I have taken it flying on a bright sunny day in March. The larva is polyphagous on low plants. (C.)

(To be continued.)

HOW TO SET LEPIDOPTERA.

BY THE REV. J. GREENE, M.A.

It will readily be granted that an insect, however fine its condition may be, loses much, both of its beauty and value, when badly set. To set an insect *well* is not an easy matter, and requires a considerable amount of patience and skill. There are three methods in general use, which I may mention—the flat, the rounded, and the sloping. The first of these prevails generally on the continent, but meets (in my opinion deservedly) with little favour in England. The second may, I think, be



termed the metropolitan method, being, as far as my experience goes, almost confined to the London entomologists. The third is the plan adopted by a large number of the country collectors, and is the one I employ myself. But there are, unfortunately, not a few who employ a method of their own. The following is the recipe:—

"Take the largest pin you can find, if with a gigantic head so much the better; thrust it hap-hazard into the body of the insect, then pin it to a piece of cork, push up the right-hand wing half an inch, the left a quarter ditto; the abdomen may turn either to the right or left, and the antennæ should stretch out straight from the head, or lie above or below the insect."

Now assuming for the moment, that this plan, however *simple*, is anything but pleasing to the eye, I venture to suggest to the inexperienced, as the result of many years trial, the following method, requesting them at the same time to bear in mind that I do not assert it to be the *best*—only *better* than that which they have been in the habit of adopting.

Get a board of soft deal, (fig. 1, A A A A,) a foot or somewhat more in length, and about three inches in breadth. In the middle make a groove, B B, one third of an inch in depth, and a quarter of an inch in breadth. Glue a thin layer of cork on the bottom of the groove. Commencing then at the edge of the groove, plane each side of the



board until it assumes the form in figure 2, taking the greatest care that each side exactly corresponds.* Suppose now you have a specimen, say of *L. turca*; hold it underneath with the fore-finger and thumb, pressing up the wings, until their apices nearly touch; then take the pin, insert it exactly in the centre of the thorax, (C,) the head of the pin sloping slightly forwards towards the head of the insect. The point of the pin should emerge at the juncture of the legs. The pin should be clear of the moth on the under side, at least one fifth of an inch: fix the moth now in the groove. There should be a *slight space between the moth and each side of the groove*. Push in the pin until the wings are *nearly*, not quite level with the board. Then move up the fore wing to the required height, and having a little slip of paper on the moistened tip of the middle finger of the left hand, hold the wing with it by the apex in this position; then take in the other hand a pin, (D,) and insert it in the board, as in the figure, and press it *gently* down till it holds the wing firm. Pursue the same method with the other side. By this means

* If preferred, the board may be rounded, as in figure 3.

you will see whether the wings are the same height, a condition inseparable from good setting.

When this is arranged to your satisfaction, take a slip of stiff paper, (E,) and pin it on the apex of the wing, as in the figure. Remove now pin D, and having pushed up the under wing, fasten it by slip F. In order that the abdomen may be in its proper position, fix it, as in the figure, with the two pins, G and H. The antennæ should also be arranged with pins: this being done the operation is accomplished, and the insect should be left there for from ten days to three weeks. However intricate this "modus operandi" may appear in the *description*, it is in reality very simple after a little experience; and, aided by the figures, I trust my readers will find it so, should they feel disposed to adopt it. I need scarcely remark that the boards and grooves must vary in size according to the insects; but having once settled the amount of *slope* it should be alike in all.

Entomological pins may be obtained of Edelsten and Williams, Iron Works, Birmingham, who will, upon application, forward a list of prices, etc. The sizes I use are as follow:—For the large *Sphingidæ* and *Bombyces*, 11 and 12; for the *Rhopalocera*, middle-sized *Sphingidæ*, *Bombyces*, *Noctuæ* and large *Geometræ*, 8; for middle-sized *Pyrales* and *Geometræ*, 7; and for the small species of all orders, 10.*

Should these remarks prove of any service to the readers of "The Naturalist," I shall be happy, if spared, to forward occasional similar notices as to catching, killing, etc.

32, Lower Pembroke Street, Dublin.

A LIST OF THE RARER SPECIES OF COLEOPTERA, WHICH OCCUR, OR HAVE BEEN TAKEN IN THE NEIGHBOURHOOD OF HARLESTON, NORFOLK.

BY J. LEEDES FOX, ESQ.

AND IN THE NEIGHBOURHOOD OF BUNGAY.†

BY W. GARNES, ESQ.

[When no initial is affixed the insect has been recorded by each of the above gentlemen. The initials F and G respectively intimate that it has been observed only by the person to whom the said initial refers.]

Carabus clathratus.—Once by my father, a few years ago, close to the town, and is now in our collection. (G.)

* Nos. 5 and 15 are also most useful sizes.—Ed.

† Bungay is situated in the north of Suffolk. Harleston is just in the borders of Norfolk, about seven miles west of Bungay. The latter town is about twelve miles from Lowestoft.—Ed.

Culosoma sycophanta.—I have one specimen that was found at Lowestoft. (G.)

Nebria livida.—At Dunwich this year. (G.)

Panagæus crux-major.—Several a few years ago in a flood. (G.)

Anchomenus sexpunctatus.—Once in a flood. (F.) Plentifully some years ago by the late Mr. Cooper, in Sexton Wood. (G.)

Lelia chlorocephala.—Occasionally. (F.)

Oödes helopioides.—Rare in floods.

Pterostichus picimanus.—I took two specimens in a flood about four years ago. (F.)

P. anthracinus.—Frequent in marshes in spring. (F.)

P. ruficollis.—I once took a specimen at St. Margaret's. (F.)

Amara spinifer.—Frequent in autumn. (F.) Occasionally. (G.)

Harpalus sabulicola.—Very rare. (G.)

H. punctatulus.—Rare. (F.)

H. serripes.—Occasionally in gravel-pits. (F.)

Trechus discus.—One specimen some years ago. (F.)

Bembidium rufescens.—Very rare.

Agabus agilis.—Very rare. (G.)

Hydroporus Davisii.—Very rare. (G.) Occasionally. (F.)

H. punctatus.—Frequent. (F.)

H. picipes.—Very rare. (G.)

H. vittula.—Occasionally. (G.)

H. memnonius.—Occasionally. (G.)

H. Gyllenhalii.—Not uncommon in one pond near Bungay, in the winter and early spring months. (G.)

Haliphus obliquus.—Frequent. (F.)

H. elevatus.—Occasionally. (G.)

H. mucronatus.—I took this insect once, in May, 1856, in a ditch on Bungay Common. (G.)

H. confinis.—Occasionally. (G.)

Cnemidotus cæsus.—Rare. (G.) Occasionally. (F.)

Pelobius Hermannii.—Frequent. (F.)

Colymbetes bistriatus.—Rare. (F.)

C. vitreus.—Rare. (F.)

Dytichus punctulatus.—Frequent. (F.)

Parnus auriculatus.—Very rare. (G.)

Elmis variabilis and *E. lacustris*.—Not uncommon. (G.)

The Rev. Hamlet Clark, in speaking of these two insects in the "Zoologist," for April, 1856, says, "It is to be noticed, that while *E. variabilis* is taken only or principally in the northern counties, *E. lacustris* has its metropolis in the southern." I find them together in the same

stream, under the same stones, and on the same plants. (G.)

Elmis cupreus.—Occasionally. (G.)

Helophorus dorsalis.—I took this insect once this year, (1857.) (G.)

Hydrochus elongatus.—Frequent. (F.)

Oiceoptema dispar.—Very rare. (G.)

Silpha tristis.—Very rare. (G.)

Enicocerus viridieneus.—Frequent. (F.)

Berosus ariceps.—Occasionally in early spring in a pond at Weybread. (F.)

Phalacrus carices.—Sometimes abundant. (F.)

Necrophorus sepultor.—Occasionally. (F.)

Nitidulæ variegatæ.—In blossoms of *Oxyanthus crategi*. (F.)

Strongylus imperialis.—Rare. (F.)

Campta lutea.—Frequent. (F.)

Micropeplus porentus.—Frequent. (F.)

M. staphylinioides.—I once took this species under some fir trees. (F.)

Triphyllus punctatus.—Occasionally in fungi in December.

Tetratoma ancora.—Once by my father. (G.)

(To be continued.)

A LIST OF THE INSECTS OBSERVED IN THE SOUTHERN PART OF THE COUNTY OF SUSSEX.

BY W. C. UNWIN, LEWES.

IN submitting to the readers of "The Naturalist" the following list of some of the Insects of the different orders, observed on the chalk range of the county of Sussex, within a limited district, I would briefly remark it has no pretensions to perfection, as doubtless many species still remain to be added to it; but all that are here noted are from personal observations, or from those of my friends, on whose accuracy I can rely. It is intended the list in its continuation should embrace portions of the other orders, and it is hoped it will be a means of affording some degree of interest to those who delight in the same pursuit. To entomologists of a higher rank it will appear but a trivial effort towards the advancement of science, being, as it is, the result of a collector's notes: but a good collector must necessarily be a tolerably good observer. I will commence with the order *Diptera*.

FAMILY SYRPHIDÆ.*

* The student in Entomology will find ample details of this interesting family of insects in "Insecta Britannica—Diptera." Vol. I. By Mr. Walker. And also a shorter notice in Dallas's "Elements of Entomology," just finished. The family is divided into thirty-one genera, (British,) and the species are familiar to all those who have observed the small bee-like insect, hovering over the flowers in gardens or woods from spring to autumn.—ED.

Eristalis tenax.—A very common species, and usually appears on the first warm days of March; probably, like some of the Lepidoptera, is called forth from its winter hybernation by the genial warmth of spring. It is an insect of successive occurrence throughout all the summer months, even until late in autumn, being one of the few insects which may be seen on the blossoms of the ivy on a bright October day.

Var. *Campestris*.—This variety is very common.

E. æneus.—I have taken this species off the flowers of *Senecio Jacobæa*, (common ragwort,) at Pevensey, on the shingle, and also in a lane near Kingston, Lewes, in August, but not common.

E. similis.—Of very frequent occurrence throughout the summer; habits similar to *tenax*.

E. intricarius.—Not common, but observed on the blossom of the blackthorn, (*Prunus spinosa*,) in April and May, near Landport and Iford, near Lewes.

E. nemorum.—In the Plashet Wood in June and July, on umbelliferous plants.

E. arbustorum.—Abundant everywhere throughout the summer months. The male and female present such a very different appearance that the young collector might readily mistake them for separate species.

E. horticola.—In Plashet and Warringore Woods. Rare.

Helophilus pendulus.—In Plashet Wood and the lanes in the neighbourhood of Lewes and Hailsham, from early spring throughout the summer. Varies much in size.

H. lineatus.—Very rare. One specimen only, taken in a wood near Firle.

Syritta pipiens.—Most abundant. An active lively little insect, and one that may be observed on almost every roadside or garden flower throughout the summer.

Xylota sylvanum.—Not common, and chiefly to be found in the lanes near to woods—the Plashet and Warringore Woods. A very shy insect.

X. segnis.—Found in the same localities as the preceding, but rarely.

Criorhina oxyacanthæ.—In the Plashet Wood on warm days of March I have observed it tolerably common, settling before me on the pathways in the bright sunshine; it is apparently a rather bold species, similar in its habits to *Sarcophaga carnaria*.

Volucella pellucens.—Taken, but rarely, in the Plashet Wood in July and August, basking in the hottest sunshine upon the leaves of trees and plants. It is a very beautiful species.

V. inflata.—Equally as rare as the preceding, and equally as handsome. It frequents the same localities in June and July.

V. bombylans.—Common in August, and usually found at rest on the flowers of the knapweed, (*Centaurea scabiosa*,) on the borders of corn-fields at the foot of the Downs. It is very sluggish, allowing itself to be taken with the fingers. It has a very bee-like appearance.

Chrysotoxum intermedium.—Rare. I captured two specimens on July 23rd, 1854, in the Plashet Wood.

C. marginatum.—Rare. In a moist wood near Firle, in July, 1855. This

with *intermedium*, is a very prettily marked species.

Pipiza noctiluca.—Taken off the leaves of hazel in a lane near Landport, near Lewes, in June. Occasionally.

P. notata.—Two specimens from the blossoms of the common blackberry by the roadside near the Spittal, Lewes.

P. virens.—Found near Landport in the flowers of *Ranunculus acris*, in June, 1854. Individual species of this genus do not appear to be very common.

Chrysogaster chalybeata.—Rare. I have observed, or rather captured, two specimens from the flowers of ranunculi. The flowers of the ranunculi, and also those of the dandelion, appear to be especial favourites with the *Diptera*.

C. viduata.—Not uncommon in June and July in the neighbourhood, on the flowers of *Ranunculus acris* and *bulbosus*.

C. metallica.—Same habits as the last, and, no doubt, frequently confounded with it. A difficult genus to determine.

Brachyopa bicolor.—Of frequent occurrence generally. I have observed it in several localities in the neighbourhood in May and June.

Rhingia rostrata.—Very common and generally distributed in this locality, visiting the blossoms of the hawthorn in May and June; it continues to be found all the summer months, and is then attracted by the flowers of the different species of *Cardui*. It is a very pretty species, and one which may be easily known.

(To be continued.)

Miscellaneous Notices.

Carnivorous Propensity of the Hedgehog.—When shooting in the preserves of Sir Brydges Henniker, near Dunmow, the beginning of the present month, I saw among the “vermin” a long row of Hedgehogs. I asked the keeper what his object was in exterminating this, in my opinion, harmless animal. He answered, “It sucks eggs, and I once saw it kill a Leveret.” On further enquiry, he stated that this took place when he was in the service of a gentleman in Norfolk, who was present and saw it done. The young have been tamed and turned down in the garden. Should this meet the eye of the gentleman referred to, I should be much obliged if he will confirm or deny the story.—C. R. BREE, Stricklands, Stowmarket, October 15th., 1857.

[It is well known that the Hedgehog is, on occasion, carnivorous.—F. O. MORRIS.]

Mildness of the Early Winter of 1857.—“As a proof,” to use the stereotyped phrase, “of the extraordinary mildness of the season,” I have to mention, in addition to other instances from Lincolnshire and elsewhere, that here we have at the date of “these presents,” in our garden, sweet-peas, fuchsias, and violets in bloom and bud; and until within the last

week or so, the elms at Kilnwick Percy, Londesborough, and other parts of the country, were almost as perfectly green as in the height of summer. Last Saturday, the 21st., I heard the Thrush singing in a wood near the first-named place, and gathered three mushrooms in the field by its side. There is no appearance of any change yet, so that we may again have, as I saw some years ago, and recorded the fact at the time in the "Zoologist," the fuchsia in blossom in Christmas week near Malton, eighteen miles north-east of York. I hear that it has been very cold in the south in Berkshire and Cambridgeshire, but here we have had nothing but mild fine weather with occasional fogs.—F. O. MORRIS, Nunburnholme Rectory, November 24th., 1857.

P. S.—27th.—On the 25th. we dined, from choice, with the window wide open, and several times the fires have been forgotten, and let go out. To-day is a lovely, warm, nay hot, sunshiny day, "as mild as midsummer."—F. O. M.

"Beautiful ripe strawberries were gathered on Wednesday last, (25th. of November,) in the garden of Fred. Glenton, Esq., at Redcar, (the extreme north-east point of Yorkshire, and on the sea coast.)"—*Yorkshire Gazette*, November 28th., 1857.

A Winter Visitor.—A fine specimen of the Butcher Bird, (*Lanius excubitor*), was shot last week at Twecher, near Kirkintilloch, by John Duncan. When shot it was engaged at dinner on a mouse, which, according to its usual custom, it had stuck on the point of a thorn in a hedge, to enable it to tear it more easily to pieces. The above expressive name has been given to this bird from its suspending its prey before devouring it. It is an inhabitant of the northern parts of Europe, and is seldom seen in this district.—*Glasgow Bulletin*, December, 1st., 1857.

Review.

The Natural History Review. No. I., January, 1857. London: HIGHLEY, Fleet Street. Edinburgh: JOHNSTONE AND HUNTER. Dublin: HODGES AND SMITH.

This number contains the following Reviews:—

Review 1.—"Synopsis of the British Diatomaceæ." Vol. II. By W. Smith, F.L.S. 2.—"Elements of Entomology." By W. S. Dallas, F.L.S. 3.—"Ornithological Synonyms." By H. E. Strickland, F.G.S. 4.—"General Outline of the Animal Kingdom." Second edition. By T. R. Jones, F.R.S. 5.—"Entomologist's Annual for 1857." By H. T. Stainton. 6.—"Typical Forms and Special Ends in Creation." By Rev. J. M'Cosh, L.L.D., and George Dickie, M.D. 7.—"Elementary Course of Geology,

etc." Second edition. By Professor D. F. Ansted. 8.—"Miscellaneous Notices." 9.—"Austrian Fauna—Coleoptera." By L. Redtenbacher. 10.—"French Fauna—Coleoptera." By M. M. Fairmaire, and Laboulbene. 11.—"Insects of Germany—Coleoptera." By Dr. Herman Schaum, and Mr. G. Kraatz. 12.—"Works on General Zoology," New English Translations. 13.—"Manual of British Botany." By Charles C. Babington, F.R.S. 14.—"Glaucus; or, The Wonders of the Shore." Third edition. By Charles Kingsley, F.S.A.

Also nine original communications made to various societies, and thirty notices of serials.

Exchange.

No doubt there are many of your correspondents, and readers of "The Naturalist," who take an interest in Conchology. I should be glad to afford information and lists to any such respecting the shells of this coast and district, and also to make exchanges of Marine, Land, and Fresh-water shells, as mutual accommodation in exchanging is a means of acquiring a complete collection, especially to inland subscribers. "The Naturalist" offers a medium of communication on the subject; being a subscriber, I venture to avail myself of it.—CHARLES H. BROWN, Southport, Lancashire, October 20th., 1857.

Proceedings of Societies.

Thirsk Natural History Society.—On Monday, November 2nd, was held the fifth annual meeting of this Society, Mr. J. G. Baker in the chair. The officers for the past year brought in their reports, were thanked for their services, and re-elected as follows:—President, Mr. J. G. Baker; Secretary, Mr. R. D. Carter; Librarian, Mr. J. J. Packer.

Mr J. G. Baker said, that by reason of the sale of its herbaria, and other causes, the exchanges of British plants, which had been carried on for so many years with eminent utility by the London Botanical Society, were at present suspended, and that in consequence there was now no convenient centre to which collectors might send their duplicates to receive desiderata in return. Whilst this position of affairs continued, he suggested that the Thirsk Natural History Society might profitably lend its endeavours to fill up the vacancy; and he volunteered, if this idea met with the approbation of the members, to undertake the management of the distribution of flowering plants and ferns.

Mr. J. H. Davies expressed his approbation of the idea, and a wish that mosses should be included in the scheme. After some discussion of

their details, the following resolutions, which were proposed by Mr. G. R. Baker, and seconded by Mr. J. Rhodes, were adopted unanimously.

I.—That pending the abeyance of the Botanical Society of London, this Society establish a club for the interchange of dried specimens of British Plants, especially of the higher orders, the management of which shall be vested in two Curators and the Secretary.

II.—That in order to further the carrying into effect of the previous resolution, the Society agrees to admit Corresponding or Non-proprietary Members at the ordinary rate of subscription, (viz., six shillings per annum,) remitting in their favour the customary entrance fee.

III.—That to such of its Corresponding or Proprietary Members as are engaged in the formation of their herbaria of flowering plants or ferns, the Society will undertake to furnish a selection of desiderata in return for a supply of specimens of such species as it requires; and that to such of them as need assistance in naming their specimens, and to such as wish to exchange mosses, it will be prepared to lend such help as lies in its power.

Mr. J. G. Baker was appointed Curator for flowering plants and ferns, and Mr. J. H. Davies for mosses.

Mr. H. Ibbotson exhibited specimens of *Leucobrium glaucum* in fruit, and *Dicranodontium longirostre*, collected by Spruce in the Pyrenees.

The managers of the club have issued the following circular:—

BOTANICAL EXCHANGE CLUB.

Information and Instruction to Contributors.

I.—It is required that the specimens contributed shall have been dried carefully, and that without exceeding the size of half a sheet of demy, they furnish as complete illustrations of the species they represent as circumstances will admit.

II.—To each specimen sent for exchange must be fastened a written or printed label, furnishing the following items of information, namely, 1st., the number and name of the plant, with the authority for the latter, as given in the latest edition of the London Catalogue, or if a moss, in the Bryologia Britannica; 2nd., the locality, county, and date; 3rd., the name of the collector and contributor.

III.—In furnishing lists of desiderata, it is requested that the London Catalogue and Bryologia Britannica be followed as standards of nomenclature and arrangement.

IV.—It is proposed to send out the return packets as early in the year as practicable, beginning with 1858; and to distribute each spring a report of the operations of the Club, and a list of its desiderata.

John G. Baker, and John H. Davies, Curators; Richard D. Carter, Secretary.

The Currist.

IN "The Naturalist" for November, I noticed your query with regard to the autumnal tone of the Rook. I, too, have been struck with the peculiarity of that tone, and have stated my impression of it in a little poem entitled "Frank Sylvan." I send you along with this the volume in which the poem is published; and I beg you will do me the honour and kindness to accept it with my best wishes. I have just read the sixth volume of your "History of British Birds," and I cannot refrain from expressing to you my admiration of the masterly manner in which you have completed your charming work.—THOMAS AIRD, Dumfries, November 18th., 1857.

The following is the passage referred to, and a good passage it is, as is another on the flight of the Cusbat, on the following page.

"Has not the Rook a harvest cry? a slight
Percussive breathing through her usual note;
A chuckle? that's too strong; well call it then
The halitus of a spirit crowding through
Her feeble voice, like thanks for God's good corn.
Is this a fancy, or is this a fact?"

F. O. MORRIS.

I think you quite right about the notes of birds. The seasonal variations in the case of the Rook are very discernible.—R. P. ALINGTON, Swinhope Rectory, November 27th., 1857.

The Cockchaffer, (*Melolontha vulgaris*).—On the 17th. of November last, a workman was removing the earth heaped on the side of a gravel-pit I had opened here, for the purpose of excavating further, and under the soil, and on the grass on the former surface, he found two specimens of the common Cockchaffer alive. I never before knew this insect alive except in the height of summer. Was it an early or late hatch from the chrysalis? Had they lain there since they first came out, or had they burrowed in there since? And is it a usual or even an unusual circumstance for these insects to go under ground for the winter?—F. O. MORRIS, Nunburnholme Rectory, December 14th., 1857.

Animalcules.—For some time past I have observed in a brook in this neighbourhood, patches of *Animalcules*, of a blood colour, on the surface of the mud. On examining some of the mud into which they sink upon being touched, I found it to contain reddish worms, of about the thickness of a pin, and three-quarters of an inch in length. Could any of the readers of "The Naturalist" favour me with the name of them, and also any other information respecting them.—HENRY BUCKLEY, Calthorpe Street, Birmingham, November 25th., 1857.

A WORD ABOUT MICE.

BY O. S. ROUND, ESQ.

Our lady readers will not, I fear, think this a very pretty subject, and some, and perhaps not a few, will associate it in their minds with some degree of nervous terror; but I must say that I think, however common this feeling may be, it arises and is perpetuated in great error, which a very little reflection, and a more intimate knowledge of the poor little object of it, will immediately dispel. Only consider your bulk in proportion to a Mouse; it is too ridiculous an idea to admit of a comparison. It may be said so is a wasp; but even a noxious insect seldom attacks, and a Mouse never; nay, it is the emblem of timidity, and did we but reflect upon the real terror which we inspire, and how their little hearts beat at the sight of, to them, so really monstrous an animal as ourselves, we should directly see the utter irrationality of our feeling. I believe that nurses and ignorant people, with whom children are necessarily brought much in contact, originate and foster this mistake, but I am sure it needs but little reasoning to shew how great a one it is. Only look calmly at one of these little creatures, as he steals forth warily from his hole to pick up a crumb which we may chance to have dropped, observe his elegant shape and proportions, the gentle curve of his back, his delicate legs and ears, his bright eyes, and agility and grace of movement, and you cannot fail to be struck by them. Then regard him as a beautiful work of the Creator; consider that his conformation is in all respects, as far as natural wants and qualifications are concerned, the same as our own, only that in agility and in natural grace he is far our superior; indeed it is, like all God's works, beautiful in its adaptation to its wants and necessities to the place it is destined to fill in the scale of creation.

Upon the question of the necessity that exists, or is thought to exist, for their destruction, I will not enter. They have many enemies, the cat, above all, being so common a domestic animal as to insure the supply being equal to the demand, and being always sufficient to scare them from intrusiveness, if she does not make them her prey; but this is a part of that wonderful scheme which we cannot fathom. In our country there are six distinct species—the Common Mouse, or *Mus domesticus*, the Long-tailed Field Mouse, or *Mus campestris*, the Short-tailed Field Mouse, or *Mus pratensis*, the Mower's Mouse, (*Mus messorius*), and the two Shrews, the common one, (*Sorex araneus*), and the Water Shrew, (*Sorex fodiens*;) besides, the following have been considered distinct species:—The Black Short-tailed Field Mouse, otherwise the Black Water Vole, (*Arvicola ater*), the Oared Shrew, (*Sorex remifer*), and the Water Vole, (*Arvicola am-*

phibius.) These last differ chiefly in size, and the Black Water Vole is certainly much less than the Short-tailed Field or Grass Mouse, to which it bears in form and habits so striking a resemblance.

The Common Mouse it would almost seem a work of supererogation to describe particularly, most of my readers being very well acquainted with him, as he is a great lover of domestication, and is seldom or never found in the fields, but prefers the shelter of houses, and the ample supply of farinaceous food which the barns and granaries and stacks of farms supply him with. Here the owl is as much his enemy as the cat, and it is very entertaining to see one of these wise-looking gentlemen in the dusk of the evening sitting motionless near the bottom of a corn-stack watching for his prey; and I dare say my readers have often observed the small hole at the barn end, which is purposely made for his ingress and egress.

Mice occasionally are fond of literature, and a hoard of old papers laid up for years without being disturbed, will be often found to be the nursery of a brood of these creatures, who have shredded up the sheets to form a soft bed for the scions of the race of *Mus*. When I was a boy, I have sat for hours together watching these pretty creatures, to see how they sat on their hinder legs, when by chance a real prize, in the shape of a whole uncaten oat, was found, and with what dexterity they chaffed off the husk, which fell in a tiny shower around them, and then on the least alarm how they disappeared with the rapidity of thought; but withal they are not good runners neither; take them on to a large surface, without the advantage of corners and appliances of concealment, and they are what is vulgarly called "done;" they make a poor show, and gallop along very helplessly; in fact, they are much like anything else *out* of its element. Mice are very prolific, and the young are blind and hairless for some days after they are born, and the male is darker and smaller than the female, and this holds good of all the other kinds.

The next kind we come to is the Long-tailed Field Mouse. This is a very pretty creature, larger than the Common Mouse, and of a fine sandy brown, with large, fine, dark eyes, and a white under part. He it is who commits such depredations in the crocus and pea-beds, and who is, perhaps, the handsomest of the whole race. The fields are his home, and those who have lived in the country know how often the ploughman dislodges him from his hole in the fallow. Schoolboys too well know how these little fellows make a famous team of miniature coach-horses, harnessed with thread like the "set out" of the famous Cinderella.

We next come to the Short-tailed Field Mouse, who is certainly not so handsome a gentleman, although his mode of life is curious enough. His head is large, and his nose blunt, and his fur blueish, with red brown extremities. His retreat is in the pasture, hence his name of "*pratensis*,"

or "of the meadow;" and here, under a canopy, to him, of vast and complex herbage, he makes arcades in all directions, but all centring in an underground retreat; and I have observed that he adapts himself to circumstances in the formation of his nest, namely, that where the grass is long and undisturbed, he usually places his "cradle of the young" on the ground, but where the grass is short and more or less fed, it is underground, although he does not by choice fix upon a fed pasture.

We now come to the Shrews, and these are very elegant little creatures, and familiar to every one, as cats kill, but will not eat them, and thus they are constantly found dead in our paths. The fur is most beautiful, and much partakes of the character of that of the Mole, which keeps a soft surface in any direction. These little creatures it is which we hear like grasshoppers chirping in the herbage near us, so shrill is the sibilous sound from their tiny throats. The Water Shrew is larger than the common one, and, I think, somewhat lighter in colour; he is strictly amphibious, and swims and dives with the greatest facility; his nose is also prolonged more than that of his congener, and partakes very much of the character of a snout.

Last, and although least in one sense, not in another, we come to the Mower's Mouse, a species which, until the year 1767, was, as far as is known, unnoticed by naturalists. In that year Gilbert White, the Selborne historian, in a letter to Thomas Pennant, first brought them into notice, although we must suppose, as they are merely locally uncommon, they were always known to villagers and others, whose occupation took them into the fields so much. They are something like the Shrew in shape, but generally smaller, and much lighter and redder. Their nest is about the size of a cricket-ball, and usually suspended about three or four inches above the ground, and fastened, or rather woven, around the stalks of the surrounding corn. Into this "procreant cradle" there is apparently no entrance, but the mother of the little ones, who are nestled so warmly within, has some mode of getting in and out, although it be hid from human sight. These little animals are very tame, and I have seen them feed from the hand readily when in a state of domestication.

There are varieties of almost all the different species, albinos or white Mice, grey and black, but in all the chief characteristics are very distinct; and let us never forget that these little creatures are only one out of unnumbered genera of living beings, formed by the same hand which has "done all things well."

Pembroke Square, Kensington, December, 1857.

CHARACTERISTICS OF COMMON BIRDS.

BY O. S. ROUND, ESQ.

(Continued from page 7.)

THE wings and tail of the Nightjar are very large for his size, and he has a flapping way of flying, which gives the idea of a certain degree of stupidity or helplessness; but this is a mistake, for it arises, I am convinced, from the ease with which he flies, and partly, perhaps, the hour at which we see him, for it must be still light, and therefore he has by no means awoken from his day's slumbers, for there can be no doubt that his powers of flight are very great, of which any one on a light night who will take the trouble to watch him may be soon convinced. It is very common to hear him called ugly, by reason of his large mouth and eyes, but when he is really awake and alert, he does not deserve this character, for instead of nodding head and half-closed eyes, he sits erect, constantly looking round after prey, after which he dashes away like an arrow. His colours are certainly unobtrusive, and well suited to his habits, for the resemblance which he exhibits to the grey stones and moss among which he sits is very extraordinary, and in the day-time you may stumble upon him almost before he will rise, but he does not fly far, unless roused again, and then merely skims away beyond reach. The cock and hen are very similar in general appearance, but his wings and tail are garnished with white spots at the ends of the outermost feathers, which shew very prettily when he is on the wing; in the hen bird these spots are ochre-coloured. Generally speaking, the Nightjar flies low, and will sit on gravel paths watching for prey, rising, and catching, and settling again, but when he makes a flit from cover to cover at any distance, I have seen him fly very high and boldly. It is also his custom to rise almost perpendicularly, and strike his wings over his back, after the manner of the Smiter Pigeon.

But the most singular attribute of the Nightjar is the loud noise he makes when seated upon some elevated point, and which has procured him the name of the "*Night Rail*." Almost every one knows the instances Gilbert White gives of the vibration caused by this sound when uttered by one of these birds, which was seated on the small cross of a wooden summer-house, in which he and some friends were taking tea. I have never had any similar proof of this, but I have got as near this bird when uttering this sound as it is possible to approach any wild bird, namely, under the very tree he was upon, and so loud did it sound, that I could easily realize the fact of a hollow wooden edifice being actually shaken by it, so as to cause a sensible vibration. I remember very well some years

ago a Nightjar had a predilection for the tops of some tall beeches which grew close to our house, and the sound was so sonorous that I have laid awake and anathematized him in no gentle terms or temper.

The resemblance which this bird bears to the ground upon which he ordinarily sits is carried out in his eggs and young, albeit that the former are by no means destitute of beauty. They are more spherical than ordinary, and are covered with every variety of brown and grey, in a very soft and varied pattern. They make no nest, but choose a bare patch or hollow of earth, sheltered by a near heath-tuft, and there the young are hatched, and lie like lumps of dirt or toads for a long time before they make any shew of feathers. The female will not readily desert her eggs, and her young never. She will suffer herself to be pelted, (as I remember to my shame,) and undergo every species of persecution, in one instance, as I also remember, actually extending to the loss of her tail, and yet she succeeded in rearing them; under the circumstances it was certainly little less than a miracle, but boys in their pursuit of natural history are sadly thoughtless, and little reck of the pain which they inflict. In inculcating the taste, never let the tutor forget to instil likewise the lesson of mercy.

Before leaving my *Caprimulgus*, I must refer to his feet, which are worth attention. He is sometimes called the Nighthawk, but this is a most ridiculous name, unless the fact of *preying* upon moths and beetles entitles him to it, in which case all birds which feed on living creatures are Hawks. However, his feet are very small and pretty, and answer no purpose apparently but that of perching, and yet the nail of the middle toe is serrated, or rather pectinated, that is, like a comb. The object of this provision does not clearly appear. Gilbert White thought that he had seen prey taken by the foot, but this was mere conjecture, and I don't see how such a formation could much assist in securing the prey; certainly the same formation is observable in the Heron, and in his case the prey is assuredly slippery enough, but it does not appear to me that we have any sufficient warrant upon evidence or observation for assigning any particular use for this natural comb, that is, there is nothing apparently to shew the necessity or particular use of such a formation in these two birds, and therefore, like many other things of the same nature, we must rest content with the conviction

"that not for nought
Was any one thing given or made,"

although we may not be able to discern its use.

In speaking of Owls as mousers, as is well known, a greenhorn coming to a farmer is invited to an expedition at what is called "Owl-catching," at which he is easily persuaded to play the subordinate part of standing

with a sieve below in the barn to catch the game, which is to be caught napping above and thrown down; but need it be said that after a little time a shower of dirty water, from a pailful taken aloft on purpose, soon discovers the true nature of this "Owl-catching."

Much controversy has arisen as to what is really a "Screech Owl." My own experience would decidedly fix this name on the Yellow Owl. The Brown Owl hoots, with the peculiar melancholy tremulous sound, which fills the ignorant with such terror as it breaks the silence of the midnight air. How often I have watched him against the moonlight, quivering on his perch! and, when all is said and done, there is great melancholy in it.

Another heath-bird which is nowhere numerous is the Stone Curlew, (*Charadrius Edicnemus*), and, from his wild habits and habitat, can never be so familiar as other wild birds. It is evident to me that these birds take very long flights. I have been in districts where they were by no means numerous, and yet it was evident as darkness came on, by their cries, which resounded on all sides, that there were very many on the wing. The note is between a whistle and a scream, and they have also a running note; the former supposed by Buffon to resemble the word *turlui*. These birds are somewhat wild, and difficult to come near, unless flushed by chance; they run very swiftly, and are off on the least alarm. Amongst the country people they are known under the general name of "Curlews." They bear a striking resemblance to the Golden Plover in shape, and vary a good deal in plumage, some specimens being very dark indeed, whilst others exhibit only the varieties of greyish brown, with a dark bar across the wing; and when in flight they have much the appearance of water-birds, and the same shape and buoyant flight. The eggs of these birds much resemble those of the Peewit, but lighter, and are placed on the ground, and very difficult to discover. The Common Peewit is somewhat of a nocturnal bird, as are many of the Ducks and Snipe genus, but the small hours of darkness are left to the undisturbed possession of the true nocturnals.

(To be continued.)

A SUMMER DAY AT SELBORNE, HAMPSHIRE.

BY W. G. J.

SIXTY years have come and gone since he that made Selborne a household word was laid under the sod; or, to count time as he in his lifetime used to do, sixty times has the Cuckoo left the vale, and sixty times has he returned; sixty times has the Swallow taken his migration to and from

our native isles; sixty times have the beech trees in his beloved "Hanger" put forth their leaves, and sixty times have they strewed the plains; but while sixty years have thus passed away, the names of Gilbert White and Selborne are better known than when the latter contained the former, a living man.

To carry out a long-cherished desire, on a merry morn in June last we left Clapham by the South-Western Railway for Alton, the nearest point to Selborne by rail. Arrived there;—after going through the village, and immediately after leaving it to the left, you enter into a charming lane, with hedgerows on every side, noble conservatories for the botanist. Walking leisurely along, you here and there get through some opening a glimpse of a beauteous woodland scene, or a field covered by the hop-vines, now climbing vigorously up their poles, or it may be some fallow-field ploughed by the brown oxen, or you have to step aside to allow some joyous Giles to drive past his loaded wain. Amid such rural scenes, amid so much that was pleasing and lovely, many times did we verify the sweet language of Clare.

"Upon a molehill oft he dropt him down,
To take a prospect of the circling scene,
Marking how much the cottage roof's thatch brown
Did add its beauty to the budding green
Of sheltering trees it humbly peeped between;
The stone-racked waggon with its rumbling sound;
The windmill's sweeping sails at distance seen;
And every form that crowds the circling round,
Where the sky, stooping, seems to kiss the meeting ground."

But time progresses, and so must we. And now, having walked about four miles, crossing a bridge over the Well-head, you ascend a short rise, and

* The following I think worthy of record, not only as strengthening the fact of the return of the same Swallows to this country, but to the very neighbourhood where they had left the previous season. It is communicated by my worthy friend Thomas Durham Weir, Esq., of Boghead, Linlithgowshire, a man loved and respected by all who know him:—"The late Professor Macgillivray, of Aberdeen, being very anxious to ascertain if the White-rumped Swallows returned to the same locality, I caught several of them in September, 1838, and put small rings (silver) on their legs. In the beginning of May, 1839, a weaver shot one of these 'joyous harbingers of summer' in the neighbourhood of Whitburn, which is about three miles distant from Boghead. He observed a piece of parchment suspended from its leg, which had attracted his attention. He gave it to Mr. Nairne Mc Nab, bird-stuffer, in Bathgate, who sent it to me. I was delighted on discovering that it was one of those Swallows which I had caught during the previous year. To the silver ring there was fixed with a silken thread a small piece of parchment, on one side of which was written distinctly, in a female hand, 'Madrid, 28th. March, 1839,' and on the other side 'Donna Maria;' as some of the letters of the surname were effaced, it could not be deciphered. Below the name there was a flaming heart pierced through by two arrows.—Boghead, 16th. August, 1856."

at once you are introduced to the Plestor,* as sweet a scene as could be looked on. In the centre of it, and surrounded by a wooden seat, stands a fine Sycamore, (*Acer pseudo-platanus*;) while to the left, and close by the church-yard wall, is a stately Horse Chestnut, (*Æsculus hippocastanicus*.) The cottages are covered by Roses and Honeysuckles, now yielding a glorious perfume, and not a few of these humble cottagers literally "sit under their Vines," if not "their Fig trees." In favourable seasons the Grape perfects its fruit. Proceeding a few yards up, the vicar's house appears, and a little further on the church-yard gate. Stepping in, the noble old Yew tree, (*Taxus baccata*;) which White so particularly writes of in his *Antiquities*, (Letter V.) first attracts your attention. He gives its greatest measurement then as twenty-three feet, whilst it now is twenty-three feet four inches; in good health, pushing out new growths at every extremity. Altogether it is a tree quite equal to those of Borrowdale or Lartan's Vale, and will well bear out the solemn lines of Wordsworth addressed to these.

"A pillar'd shade,
Upon whose grassless floor of red brown hue,
By sheddings from the piercing umbrage tinged
Perennially—beneath whose sable roof
Of boughs, as if for festal purpose, deck'd
With unrejoicing berries, ghastly shapes
May meet at noontide—Fear and trembling Hope—
Silence and Foresight—Death the skeleton,
And Time the shadow—there to celebrate,
As in a natural temple, scattered o'er
With altars undisturb'd of massy stone,
United worship."

The church is a primitive looking building with a heavy tiled roof; at the west end a square embattled tower forty-five feet high somewhat relieves its low equal appearance; everything in and around is, however, clean and neat; there is a sacredness brooding over the whole place, mellowed by time, that the heart at once responds to, and feels deeply there is something here that the modern church, with its fretted roof, its gilded dome, and too often gilded preacher, cannot produce. Now, as in White's time, the south side of the kir-k-yard seems to be the favourite resting-place; but passing over many graves round by the chancel, and on

* The Plestor, or Pleystow, as White describes it. In the centre of the village, and near the church, is a square piece of ground surrounded by houses, and vulgarly called the Plestor. And in Letter X. (*Antiquities*) he further states that in 1271 Sir Adam Gurdon, in conjunction with his wife Constantia, granted to the Prior and Convent of Selborne all his claim and right to a certain place, called "La Pleystow," in the village aforesaid, "in liberam, puram, et perpetuam elemosinam." This Pleystow, (in Saxon Plegestow or Plegstow,) locus ludorum, or play-place, is a level area near the church, of about forty-four yards by thirty-six, and is now known by the name of the Plestor.

its south side is the sweet resting-place of Gilbert White. All that tells such is the case is a simple stone about eighteen inches high, fifteen inches broad, rounded at the top, and the initials G. W., 26th. June, 1793. Above all compare is such a resting-place; the green daisy-covered sod exposed to the seasons preaching the silent lesson

“That plants and flowers
Anew do deck the plain;
The woods do hear the voice of Spring,
And flourish green again.”

And lower down beneath that sod the lesson is also forced upon us

“That man, when laid in lonesome grave,
Shall sleep in death's dark gloom,
Until the eternal warning wake
The slumbers of the tomb.”

Retracing our steps back through the Plestor, immediately to the right we come to the residence of White, his birth-place, his life-long abode, and where he died; indeed, with a few exceptions, his whole life may be said to have been spent in the district, almost in the parish of Selborne, and a place better adapted to a naturalist of White's stamp could scarcely be found. The house remains very much in the same state as White left it, excepting a wing added at the west end by the present proprietor, Professor Bell. The grounds are much finer than when White had them, although in making them so nothing characteristic of its former occupant has been sacrificed. His brick-laid walk is there, his sun-dial is there, his large Oak and Cedar still flourish; you may sit down and bring to your mind what his appearance was, and you have the picture of a former time complete.

Again passing along the village, now much as it was in 1780, “a long straggling street,” some houses thatched, and with their moss-covered ornaments present a pleasing appearance, some as the church, with square tiles, but all having a tidy and cosy aspect. At the east end of the village a path leads up to the Zigzag, (so named from its construction,) and as you ascend this, a most glorious landscape reveals itself to your gaze, such a sight as the soul delights to drink in through the eyes. This hill rises above the village about three hundred feet, and is divided into a sheep-down, a high wood, and a low wood called the “Hanger.” This wood consists entirely of Beech, and growing as it here does on chalk, attains a beauty not elsewhere attained. The Beech tree, when it puts forth its young downy leaves in the early spring, is a cheering and lovely sight. In the autumn, when it assumes its rosy and brown tints, it lends a warmth to the landscape that no other tree does. No wonder then it was such a favourite with White. And this same “Hanger” is that wood

of which he writes so often, and which by his writings is known (at least by name) wherever the English language is spoken.

Sitting on the sheep-down, we can look around and over those scenes he so faithfully describes. In the distance is Wolmer Forest and pond; close by to the right is Nore Hill, beautifully wooded; below nestles the quiet village; and far away stretches the lovely scene, till the view is closed by the horizon, on the far-famed Downs of Sussex, round to Ryegate in Surrey. One pleasing feature in the sheep-downs are the bells attached to the sheep by a ribbon round their neck. Where there is nothing else to disturb the solitude, it is a pleasant, although not harmonious sound, the tinkling of each bell every nibble the sheep make. A train of associations are at once called up; we are led back to the time of the patriarchs, when the riches of that day were so invested, even to the time when Abel offered up the firstlings of his flock, till that glorious time when the shepherds, watching their flocks by night on Bethlehem's plains, beheld the star pointing the birth of our and the world's Great Shepherd.

It is somewhat interesting, too, on looking down from this eminence, to see the Swift and Swallow sporting below, the same as in the days of White; and coming through the woods, we are saluted by the mellow pipe of the Blackbird, the commanding note of the Thrush, and the laughing-like notes of the Willow Wren, all going on as they did sixty years ago. And now the thought, after having seen all these quiet scenes, and knowing the unobtrusive life White led, is forced upon us, how is it with these materials and in so simple a way has White produced such a book, which is prized by young and old, by scientific and non-scientific readers? It may be advanced as the grand cause that he "described everything simply and truthfully, recorded only as facts such as were known, and could be proved to be such, and he never forgot that one hand only fashioned all the objects which gave him pleasure and interest to observe, and that the same power regulates their continuance or change." In his forty-ninth letter he says, "It is now more than forty years that I have paid some attention to the Ornithology of this district, without being able to exhaust the subject; new occurrences still arise as long as enquiries are kept alive." Now this applies to a single parish. It shews very strikingly that Natural History, when studied in the way and in the light White studied it, is no mere waste of time, as too many suppose. If it can call up fervent reflections and sagacious reasonings, if it can keep a mind engaged for forty years without cloying, if it can yield pure delight and unblemished happiness, if its pursuit can keep mind and body in good health till the threescore years and ten are overreached, surely it may be argued this of itself is no small gain in this changing scene. But when we come to add, and to feel as he did, that the works of Nature are indeed the works of

God, that when we study these works in a right spirit we are but reading a portion of His many-leaved book, that which He pronounced six thousand years ago to be very good, and which were placed here, no doubt, for our study. It was in this spirit and with these feelings White pursued his studies; it is in this spirit and with these feelings we would have all to study the works of Nature; and when so studied, we will feel the full force of the inspired Psalmist's exclamation—"O Lord, how manifold are Thy works! in wisdom hast Thou made them all: the earth is full of Thy riches. The glory of the Lord shall endure for ever: the Lord shall rejoice in His works."

Our short remarks are made not with a view to act as a guide to a place so well known, for it is not needed; it is meant as a memorial of a happy day spent among the scenes of the parish of Selborne, a place that is, and will continue to be, sacred to every one who cherishes the memory of Gilbert White; and who that has read his interesting History does not?

Entomology.

LIST OF LEPIDOPTERA OCCURRING IN THE COUNTY OF SUFFOLK.

BY THE REV. JOSEPH GREENE, M.A., ASSISTED BY THE REV. H. HARPUR CREWE, M.A.
AND C. R. BREE, ESQ.

[The portions of these papers contributed by Mr. Crewe and Mr. Bree, are signed with the initials C and B respectively. N.B. at the head of a paragraph signifies that the remarks are made after those of Mr. Greene.]

(Continued from page 14.)

20. *Phragmatobia lubricepida*.—By no means so common as its brother *Menthrastris*.

N.B.—In the larva state this insect is more abundant than its congener, *Menthrastris*. Before they change their last skin it is almost impossible to distinguish the larvæ of *P. lubricepida* and *P. fuliginosa*, and their food-plants are the same. After its last moult, the larva of the latter insect loses the rather conspicuous, whitish, dorsal stripe, and becomes much more hairy than that of *Lubricepida*. It moreover hibernates, whilst the other invariably assumes the pupa state in the autumn. (C.)

21. *P. menthrasti*.—Most collectors, who have tried light as a method of attracting insects, will agree with me in execrating this species. The protracted period of its appearance in the perfect state, its abundance, its pertinacity in returning to the window after being forcibly ejected, and finally, its blind and warm affection for the candle, combine to render it a perfect nuisance. I have only met with one variety, a pure white, devoid of markings. I have

little doubt that here, as elsewhere among the Bombyces, some of the larvæ hatched from the eggs deposited in July and August, can be made to feed up rapidly, so as to produce the perfect insect in the same year.

N.B.—I most feelingly concur in my friend Mr. Greene's remarks on this insect's penchant for light. It is the most irritating thing in the world to have five or six of these insects striving round one's candle for the first chance of self-immolation. (C.)

22. *P. mendica*.—I once or twice met with the pretty ♀ of this species sporting about, in the noonday, on the banks of a stream running through Playford, but it seemed to be rare. It is a curious circumstance that the ♀ and not the ♂ should be found flying in the day-time.

N.B.—I have twice reared a brood of larvæ from the egg. I fed them upon various species of mint and *Epilobium hirsutum*, (The Great Willow-herb.) It is rather difficult to distinguish this larva from that of *P. lubricipida* and *P. fuliginosa*: the latter it most closely resembles. The ♂ must be killed as soon as ever they are dry, after emerging from the pupæ, or they utterly ruin themselves. I am surprised that this insect does not come to light, but I never heard of its doing so. My larvæ were full fed, and spun up in August. Some of them went just below the surface of the soil. (C.)

23. *L. monacha*.—By no means rare in the larva and pupa state. The larva may sometimes be found, like that of *A. Aprilina*, during the day-time, in the crannies and chinks of the bark of oak trees. Here also the singular pupa may occasionally be detected by entomological eyes.

N.B.—I have bred this insect from larva beaten off birch. Mr. Stainton, on the authority of Ochsenheimer, states in the Manual, that it feeds on *fir*, but I cannot think that it ever does so, and have no doubt that the mistake arose from its having been found resting on the bark in the day-time. (C.)

24. *P. salicis*.—Poplar being a very common tree in Suffolk, this insect is proportionately abundant. I remember, some years ago, being at Hammer-smith, where a row of poplars bordered the river. The quantity of wings of this insect was almost incredible. I was digging for pupæ at the time, and some idea of the number may be formed when I say that I had actually to scrape them away with the trowel. I once bred a specimen with a round hole in the left hand forewing. It is now in the collection of the Royal Dublin Society. The immature caterpillar much resembles some of the *Lithosiæ*.

25. *L. auriflua*.—Some change having taken place in the nomenclature of this species and *Chrysorrhæa*, I am not sure which is which. Whichever is the common one, is as common in Suffolk as elsewhere, and in its aggravating powers emulates *Menthrasti*.

26. *O. fascelina*.—I found about thirty larvæ of this insect on broom in the middle of May. I fed them up in my garden under muslin, and bred about half of them beginning of July. It is a difficult insect to rear, and, with me, almost impossible to do so, except on the growing plant. (B.)

N.B.—I used to take the larvæ of this insect at Cambridge, upon the hawthorn hedges. I took them this year, near here, on broom, but not being

able, like my friend Mr. Bree, to feed them on the growing plant, and give them plenty of sun and air, they all died. (C.)

27. *O. pudibunda*.—Not uncommon. The beautiful larva may be found on almost every tree. The colour of the tufts varies from bright yellow to dirty brown. In forming its cocoon it produces more silk than any other British insect. The cocoon indeed, in colour and consistency, strikingly resembles that of the famous *B. mori*.

N.B.—I have always found that the dirty brown or rather smoky-looking larva produced ♂ and the lemon-coloured ones ♀. (C.)

28. *O. coryli*.—Strange to say, I never met with the slightest trace of this insect, though oak and hazel abounded, both at Playford and Brandeston. Perhaps my fellow-labourers may have been more fortunate. I may just mention that the larva varies in colour from pale primrose to brick red.

N.B.—I bred this insect from larvæ taken in the autumn of 1856, this spring, 1857. (B.)

I have taken the larvæ in tolerable plenty in the woods round Ipswich, and both larvæ and perfect insect in the woods near here. The moth appears in May, and flies, almost before it is dark, along the hedges and ridings. I had this year a brood of eggs, laid the 27th. of May; from these I had about thirty pupæ in August. On October 28th., three ♀ and one ♂ made their appearance, and since then two more ♀ and one ♂ have emerged. I attribute this premature development to the very hot summer and extraordinarily mild autumn. The insect is, however, double-brooded, as I have beaten the larva *full-fed* in July, and the perfect insect appeared the following August. I have beaten the larva off beech, hazel, maple, and oak. It prefers the two former. It may be interesting to remark that all the five ♀ I bred this autumn were full of eggs. I have kept some of them in the hope that they are impregnated, and will hatch in the spring. The ♂ flies I may say before his wings are dry, and it is next to impossible to secure a good specimen, even when bred. (C.)

29. *O. antiqua*.—Very common.

30. *C. Neustria*.—In immense profusion. The larva was a perfect pest, crawling over the walls of the house, and entering the bed-rooms, in fact “putting in an appearance” in the most unexpected places. This seems to me a convenient place to make inquiries on a subject which has puzzled me ever since I began to collect, namely, “what becomes of the perfect insect in this and other species?” I could not have observed less than from four hundred to five hundred larvæ of this insect; I am certainly beyond the mark when I say that I did not see a dozen of the imago. Now, making every allowance for ichneumons, muscardine, birds, and every other ill to which caterpillar flesh is heir, is not this an immeasurably small proportion? The trifling number of perfect insects, (at least the trifling number *visible*), compared with the abundance of larvæ, must have struck every collector. Look at the vast number of eggs deposited by one single female *caja*! see the caterpillars by hundreds feasting on juicy nettles, or scuttling across the footpath, and yet how many have seen a dozen specimens of the perfect insect during their

whole entomological career? Take again *D. ceruleocephala*. Every hawthorn hedge swarms with the conspicuous larvæ of this species; yet, during seven years collecting, I never saw a specimen of it on the wing, and I doubt not that many others are in the same predicament. In fact, as regards the *Bombyces*, I conceive that I do not exaggerate in asserting, that nine-tenths of the specimens in our cabinets have been produced from the egg, larva, or pupa, that is, have been obtained in one or other of those stages of their existence. It is unquestionably true that an occasional capture is made on the trunks of trees, on palings, or at light; but if some of our collectors, (who keep one or two *rows* of each species,) trusted to *this* method of supplying their wants, they would painfully realize the truth of the saying, that "hope deferred maketh the heart sick." Can any one explain the cause or causes of the paucity of this order in the perfect state? We have all heard or read of ivy-hunting, swallow bloom, sugaring, pupa-digging, etc., and these subjects are well-nigh exhausted; but it still remains open to the enthusiastic aspirant after Entomological honours to disclose to us the habits, haunts, and "favourite varieties" of the *Bombyces* in the last stage of their existence. It is said, I know, that they come to light. I think I have tried that method as perseveringly as most people; but, with the exception of, at the outside, a dozen species, and those very common, I never found a *Bombyx* come to light. Besides, the few that do come are generally males, and they are so irritable in their tempers, and excitable in their movements, that it is no easy matter to capture them. When this feat is at length accomplished, and the stupified insect (which is almost sure to be found lying on its *back*) is examined, there meets the expectant collector's eager gaze a—but I need not go farther; every one knows what I mean. We have a very remarkable exception to the above observations in one of the *Sphingidæ*, namely, *S. convolvuli*, which, though not unfrequently observed in the *perfect* state, has very rarely been taken in the preceding stages in this country. Mr. Weaver once found the larva near Birmingham, I believe; and I myself, when in Gloucestershire, once bred a fine specimen from a pupa found in my garden.—These are the only cases I know of.

N.B.—I think Mr. Greene's remarks about the scarcity of this and other *Bombyces* in the imago state, arises principally from the simple difficulty of getting them at night, their habits being so different from those of the *Noctuæ* or *Geometræ*. Having no spiral tongue, they do not of course come to ivy, swallow, or sugar. They do not, as a rule, fly about in twilight, like the *Geometræ*, but many of them, such as *L. griseola*, *complana*, *complanula*, and *stramineola*, *L. chrysorrhea*, *O. pudibunda*, *P. populi*, *cassinea*, etc., come here freely to light; while several other species are beaten or found on trunks and palings abundantly. (B.)

I have not very unfrequently taken the ♂ by putting a candle at my bed-room window. This and several other of the *Bombyces*, e.g. *P. cassinea* and *P. populi*, do not, I think, fly till an hour or two after dark, and can only be attracted by a very bright light. There is a row of six or seven gas-lamps just outside this town. About a fortnight since Mr. Bree and myself turned out about half-past nine p.m., to examine them. They were all

burning dimly except one. At the dim lamps we found a solitary ♂ *P. populi*, whilst at the one bright one we took six in about five minutes. I believe, entomologically speaking, it would pay any one residing in a tolerable locality to keep a bright lamp burning from nine to twelve p.m. throughout the season. A very large per centage of the produce will, of course, be ♂. Breeding is the only certain mode of procuring the ♀ of the *Bombyces*. (C.)

(To be continued.)

A LIST OF THE INSECTS OBSERVED IN THE SOUTHERN PART OF THE COUNTY OF SUSSEX.

BY W. C. UNWIN, LEWES.

NO. II.—THE SYRPHIDE CONCLUDED.

(Continued from page 20.)

Cheilosia lucorum.—Not uncommon in May and the following months in the Plashet Wood, the plantations near Firle Park, at Chailey, and elsewhere.

C. æstracea.—Rare. The Plashet Wood, on *Heracleum sphondylium*, (the Common Cow-parsnip,) in July.

C. means.—Frequently met with on the flowers of the *Ranunculi*, by roadsides and in meadows, in April and May.

C. chlorus.—This fine insect is not uncommon in May, June, and following months; frequenting the flowers of *Ranunculus bulbosus* and *acris* especially.

C. albitarsis.—Not unfrequently observed in the spring and summer months affecting the same localities as the last species.

C. mutabilis.—A few examples of this species have been observed, but rarely, in meadows near the woods in this neighbourhood, in May and July.

C. scutellata.—Not common: in April and May.

C. chalybeata.—Rather rare in this district in spring.

C. funeralis.—Not uncommon in June, July, and August, on the *Compositæ*, especially the Common Ragwort, (*Senecio Jacobæa*,) as well also on the *Ranunculi*.

Syrphus pyrastris.—Very abundant everywhere. This fine handsome species is to be found throughout the summer months, now hovering with apparently invisible wings over flowers, and then sipping their nectar: if once alarmed it darts away with amazing rapidity. All the *Syrphi* fly very swiftly, and most of the species may be observed in flower-gardens, enjoying the hottest sunshine of a July or August day.

S. grossulariæ.—Rare. Once captured in a garden at Firle.

S. ribesii.—Common in gardens and elsewhere during the summer months.

S. vitripennis.—Abundant. And found in the same situations with the preceding throughout the summer; often frequents the *Umbellifera*.

S. bifasciatus.—Equally common with the two former species.

S. luniger.—Not uncommon in gardens and the borders of corn-fields.

S. arcuatus.—Rare. Near the Plashet Wood in May and June: it may

be readily distinguished from its allies by the dark brown stigma on the wing.
S. corollæ.—Common in gardens, hovering over or settling on flowers; also in meadows on the *Ranunculi* and *Senecio Jacobæa*, (Common Ragwort,) in June and following months.

S. balteatus.—Abundant. Frequenting the flowers of the *Ranunculi* and *Senecio Jacobæa*; it may often be observed basking on the leaves of plants and shrubs: appearance from June till September.

S. trineinctus.—Rare. It has been observed in the Plashet Wood, near Brighton, and at Firle, in June.

S. laternarius.—This species is comparatively rare. It has been captured at Pevensey, on the shingle, off the Common Ragwort, (*Senecio Jacobæa*,) in August.

S. albostrigatus.—Rare. Captured with the preceding species in the same locality and at the same time.

S. cinctus.—Not common. Has been found in Blind Lane, Ilford, and near Newhaven, in May.

S. manicatus.—Common. Frequents flowers by the road-sides generally, and the borders of corn-fields from April throughout the summer.

S. peltatus.—Several specimens were taken off the Ragwort, (*Senecio Jacobæa*,) in July, 1854, at Pevensey, and also at Eastbourne, but it has not been observed in the neighbourhood of Lewes.

S. clypeatus.—Not uncommon on *Ranunculi* and *Umbelliferae* in favourable situations in April and the following months.

S. scutatus.—Like its congeners it is very partial to the *Ranunculi* and the Ragwort, and is very general in this locality.

S. cyaneus.—Abundant everywhere from April to September in sunny weather.

S. rosarum.—Rare. One specimen only has been noticed.

S. mellinus.—Occasionally observed, but not common; near Lewes and near Chailey, in May and following months.

S. scalaris.—Of very frequent occurrence in May and June, on the flowery banks generally. It is very partial to the *Ranunculi* and Ragwort.

Doros citrofusciatus.—Rare. Two examples were captured near Firle in July, 1845, and had not been observed since, until the present year, when it was detected amongst a collection of *Diptera* and *Hymenoptera*, made by a young friend near Brighton.

D. ornatus.—Not so rare as the last, and has been captured at Ringmer, and also near Newhaven, in May and June.

Melithreptus scriptus.—Common. Frequenting warm banks generally, wherever the Common Ragwort (*Senecio Jacobæa*) grows, in July and August. It is a beautifully-marked insect.

M. menthrasti.—Not so common as the preceding species. It affects the same situations at the same period.

M. taniatus.—Rare. Near Winterbourne, and in a lane near Landport, in May and following months.

Baccha elongata.—Uncommon. Has been observed in the Plashet Wood, in June.

Ascia podagrica.—Abundant. A very pretty little species; found the end of March, in early springs, on the blossoms of the Blackthorn and the Strawberry-leaved Cinquefoil, (*Potentilla fragariastrum*,) and continues one of the many associates of bright sunny summer weather until autumn.

(To be continued.)

The Food-plants of Gonepteryx Rhamni.—I have looked over the paper on the Suffolk Lepidoptera, in "The Naturalist," and think it a very interesting one. I notice Mr. Crewe's remarks about the larvæ of *G. Rhamni*. I used to fancy that they must feed upon some other plant beside the two species of *Rhamnus*, but I never could detect them upon anything else. Lewin mentions the Wild Rose, but I think this is a mistake. I once saw a female *Rhamni* in a lane where scattered bushes of *Rhamnus Catharticus* grew in the hedge, mixed with White-thorn, Black-thorn, and abundance of Dog Roses, but she invariably selected the Buck-thorn to deposit her eggs, even when it was closely entwined with other shrubs.—H. DOUBLEDAY, Epping, November 20th., 1857.

P. fuliginosa.—I must dissent from my friend Mr. Crewe's opinion that this insect occasionally passes the winter in the *pupa* state. Though the majority of my larvæ spun up at the beginning of March, yet a considerable number turned to pupæ at the end of February, and produced the perfect insect in *twelve* days.—J. GREENE, Pembroke Street, Dublin.

Chrysophanus dispar.—In the "Zoologist," for December, 1857, and the "Zoologist" and "Naturalist" for January, 1858, Mr. G. H. King inserts an advertisement in which he offers *Chrysophanus hippothoe* for sale, collected by himself during the past season in the fens. Now, with the single exception of one specimen taken this last season in Somersetshire, and recorded in the "Intelligencer," No. 47, by Mr. Crotch, this insect has not been met with in Britain for eight or ten years. It was formerly abundant in the fens of Cambridgeshire and Huntingdonshire, but from these localities (to which it was I believe strictly confined) it has since then entirely disappeared, and though it has diligently been sought for not a single specimen has, to the best of my knowledge, been seen or heard of. Mr. King was collecting this summer in Horning Fen, near Norwich; this locality has been well worked by some very diligent entomologists for some years past, but I never heard of *C. dispar* being seen or taken there. Mr. King was here in August, and shewed both Mr. C. R. Bree and myself the insects which he professed to have taken at Horning, there was no *C. dispar* among them, nor did he say one word about having taken it. I do not wish for one moment to cast a doubt on Mr. King's veracity, but when we hear of one hundred and fifty pupæ of *Not. Carmelita* being imported from the Continent, and such insects as *O. lunaris* and *T. vespiforme* turning up common, it really does make us all suspicious. I do not ask Mr. King to give us the exact locality. In these days of insane and

ruthless extermination it would be unwise and impolitic to do so; but I must tell him as a friend that unless he gives us the neighbourhood, date, and manner of its capture, I very much fear that his advertisement will not only be a dead letter, but will most seriously damage his reputation as an honest dealer. As a dealer in insects Mr. King comes before us in a public capacity, and must therefore be prepared to give the fullest information as to the genuineness of the articles he vends. *C. dispar* does occur on the continent, but it is excessively rare, so much so that in its palmy days here it was bought up on all sides by the continental collectors. It is, I believe, common in Nubia, but I am not aware of any other locality. Will Mr. King be good enough to tell us whether by *C. hippothoe* he means *C. dispar*, and if so, when, where, and how he took it?—H. HARPUR CREWE, Stowmarket, Suffolk, January 13th., 1858.

Argynnis dia.—We have heard all the circumstances connected with the supposed capture of this insect, and we are bound to say that we do not think a sufficient case has been made out to warrant its admission as a British species. We entirely exonerate the gentleman whose name has been connected with it from the imputation of having made the slightest wilful misrepresentation, but we believe that a mistake has occurred, and the identity of the insect taken has been confused with some of the Foreign insects that gentleman had in his possession. The extreme scientific interest which is attached to the addition of any fresh Lepidopterous insect to our Fauna, and the readiness with which such an admission real or erroneous, is followed by the importation of a large family of the "insect new to Britain," the following year, demands that all newly-discovered species should be free from even the shade of suspicion. We regard the word of a gentleman as sufficient proof of his sincerity, and as settling at once the truth of his statement *as far as his belief is concerned*, but in the case of *Dia* two distinct statements as to its capture have been made, both of them essentially different, and the possession of foreign insects by that gentleman, coupled with these statements, leads to the inevitable inference that a mistake may have occurred.—ED.

Exchange Boxes.—The great desideratum in these boxes is to get size united with strength and lightness. We have lately had some made, corked on both sides, five inches by two inches and three-eighths, which unite all the above requirements. Mr. Betts, Cabinet Maker, of this place, will make them for one shilling each, and will send a specimen box on receipt of sixteen penny stamps. They will go through the post in wool for fourpence.—ED., Stowmarket.

Are the Lithosizæ attracted by sugar?—One evening last summer, I found three specimens of *L. griseola* on a tree I had sugared, together with four or five *S. xanthographa*. They were on the part of the trunk that was sugared, but whether feeding or not I was unable to determine. I should imagine the sugar had some attraction for them, as Mr. Bree mentioned a similar instance of *L. helveola* in last month's number of this magazine. I mention this fact

as the Editor suggests that it was doubtless at rest on the tree, and not feeding.—JOHN PORTER, JUN., 8, East Street, Lewes, December 14th., 1857.

Nottingham Natural History Society.—We are glad to find by a letter from Mr. J. H. Wood, that this Society is in a prosperous condition. On the 17th. of November an excellent paper was read by Mr. Morley, on Lepidopterous Insects, which contained much interesting information, and many observations especially valuable to the student. The meetings are held weekly, when a paper is read upon some subject connected with Natural History—these papers being for the most part the result of the writer's personal experience and observation. This is the right principle to act upon, and we wish the Society every success. We shall be glad at any time to receive a report embodying any original facts brought before the Society.

Cambridge Entomological Society.—The November meeting of this Society was held on Friday, the 27th. ult., at the Secretary's rooms; F. Barlow, Esq., Vice President, in the chair. The following are the names of the members balloted for and elected:—F. Stainforth, Esq., Queen's College; Mr. L. Cumming, Cambridge; H. S. Bainbridge, Esq., St. John's College; F. H. Knapp, Esq., Pembroke College.—Mr. Preston read a paper on the structural differences observable in the several stages of Lepidopterous insects. Passing over the varied forms of the egg, Mr. Preston commenced by a description of the structure of the larva; he sketched the various organs of the head and trunk, with the abdomen; he dwelt at some length on the structure of the mouth. Respecting the internal organization the author noticed in succession the nervous, the digestive, the circulatory, the respiratory, and the muscular systems. Pointing out the arrangement in each, and especially the wonderful development of the last-mentioned in the larvæ of insects. Mr. Preston then enumerated the various changes that the organs of insects underwent in passing through the pupa stage to that of the imago. The parts of the body of the imago then were described and their purposes explained. Several diagrams were exhibited as illustrative of the subject.—After the chairman had tendered the thanks of the meeting, an interesting discussion arose from some questions put by Mr. Dunning, Mr. Bree, and Mr. Crewe, regarding the sensations of insects.—The "vexed question," as to the advisability of keeping pupæ dry or moist, was also discussed.—Mr. Brown exhibited *H. peltigera*, taken near Newmarket; also very pale varieties of *Nenia typica* and *Pacilophasia marginaria*, and two specimens of *Dosithea eburnata*.—Mr. Barlow exhibited a splendid insect nearly black, which was said to be a variety of *Galleria cereana*, also a fine series of *cereana* which were distributed.—Mr. Crewe exhibited a box of *Eupitheciæ*.—Mr. Preston exhibited *Cynips aptera*.—Mr. Sealy exhibited a series of *L. callunæ*, collected in Pomona, Orkney, during the past summer. The meeting broke up at half-past ten.

A. F. SEALY, HON. SEC.

70, Trumpington Street, Cambridge.

Review.

Species General des Lépidoptères. Par M. BOISDUVAL et GUENÉE. *Tome IX.*
Uranides et Phalénites. Par M. A. GUENÉE. *Tome I.*

At length we have an instalment of the long-expected work on the *Geometridæ*, by M. Guenée. The first volume, and the two *livraisons* of plates for both volumes are before us, and we hasten to give a short *resumé* of M. Guenée's arrangement.

The *Uranides* are a small section of Lepidoptera, chiefly exotic, having a general contour much like our Swallow-tails; and M. Guenée places them between the *Pyalites* and the *Geometræ*—simply because he can find no better place for them.

The *Phalénites* or *Geometræ* of Linnæus, occupy the rest of the present volume and that which is to come. The first family in M. Guenée's arrangement is the URAPTERIDÆ; and *U. sambucata*, the type of the genus *Urapteryx*, will henceforth occupy the first place in our collections of *Geometridæ*. Then follows the second family, ENNOMIDÆ, the British genera of which are 1.—*Epione*, in which the Linnæan name of *Tespertaria* is substituted for *Parallelaria*, W. V. 2.—*Rumia*. 3.—*Venilia*. 4.—*Angerona*. 5.—*Metrocampa*. 6.—*Ellopiæ*. 7.—*Eurymene*. 8.—*Pericallia*. 9.—*Selenia*, Hub., which now includes *Illunaria*, *Lunaria*, and *Illustraria*. 10.—*Odontopera*. 11.—*Crocallis*, which includes a species from Van Dieman's Land, called *Newmannaria*, after Mr. E. Newman. 12.—*Ennomos*. 13.—*Himera*.

The family AMPHIDASYDÆ includes, 1.—*Phigalia*. 2.—*Nyssia*. 3.—*Biston*, which only contains *B. hirtaria* and its varieties. 4.—*Amphidasis*, containing *Prodromaria* and *Betularia*.

The family BOARMIDÆ includes 1.—*Hemerophila*. 2.—*Cleora*. 3.—*Boarmia*. 4.—*Tephrosia*. 5.—*Gnophos*, the typical species of this genus is *G. obscurata*, which includes our *G. pallaria*. 6.—*Dasydia*. 7.—*Pseudos*. 8.—*Mniophila*, (*Tephrosia* of Hub.)

The small family of BOLETOBIDÆ, containing only three genera, has one British genus, *Boletobia*, and one British representative, *B. fuliginaria*.

The family GEOMETRIDÆ contains: 1.—*Pseudoterpna*, (*Hemithea* of Dup. and H. D's catalogue.) 2.—*Geometra*, containing *Papilionaria* and *Smaragdaria*. 3.—*Nemoria*, containing *C. viridata* of H. D's catalogue. 4.—*Ioäis*, containing *Vernaria* and *Æruginaria* under the Linnæan name of *Lactearia*. —*Phorodesma*. 6.—*Hemithea*, in which, under the name of *H. thymiaria*, Alb., we find our *C. æstivaria*,

The family EPHYRIDÆ contains *Ephyra*; and the last family in the volume, the ACIDALIDÆ, contains 1.—*Hyria*. 2.—*Asthena*, in which we find *A. luteata*, *candidata*, *sylvata*, and *blomeraria*. 3.—*Eupisteria*. 4.—*Venusa*, in which, under the name of *V. cambricaria*, we find our *Coremia erutaria*. 5.—*Acidalia*.

The plates are exceedingly well done, but as they represent the types of the *Geometridæ* of the world, of course our little island has not many representatives. In the larvæ we have our full share, viz., *E. fuscantaria*, and

Eupithecia assimilata, Dbd. Among the imagines the British species figured are *E. fuscantaria*, *Eupethecia plumbeolata*, *nanata*, *vulgata*, *dodoneata*, *pulchellata*, *subnotata*, and *abbreviata*; *Cidaria miata*; *Aleucis pictaria*; *Cidaria russula*, variety *perfuscata*, Haw.; *Emmelesia affinitata*, Steph.; and *Oporabia autumnata*.

The preface to the volume concludes thus:—"In conclusion, I cannot resist the pleasure of closing this list by a name which I cannot repeat too often, that of my excellent and useful friend, H. Doubleday, of Epping, who seems to have devoted to my work, and even to the enriching of my collection, a more active zeal than many others display in their own interest." We are sure there are very few, if any, British Entomologists, who will not feel pleasure in reading this testimony of the first of European Lepidopterists, to the worth of so good a naturalist and so excellent a man.

The work, of which we have given this brief notice, is marvellously cheap. The letter-press, of five hundred and fourteen pages large octavo, and closely printed in small type, is only five shillings and sixpence. The plates to the two volumes, twenty-three in number, including one on the *Siculidæ*, which is published here by mistake, as it belongs to volume xi., are only twelve shillings most accurately coloured. They have been supplied to us by Messrs. Williams and Norgate.

P.S.—We are sorry to observe, since the above was written, that some, we think, very ill-timed remarks have appeared in the "Intelligencer," on the long-deferred appearance of M. Guenée's truly splendid work. When we consider the trouble which it costs us to form a collection of British Lepidoptera, we may form some opinion of the immense labour which is required to arrange the Families, Genera, and Species, with all their Synonymes, of those of the entire world. M. Guenée has been working for years, at great sacrifice of time and health, at this truly Herculean task, and we can assure him that the Entomologists of Great Britain fully appreciate the value of his labours, and pay due homage to the fame he has so justly earned.—ED.

Miscellaneous Notices.

The Missel Thrush, (*T. viscivorus*.)—While *en route* to some distant shooting-ground, the tediousness of the journey was enlivened by many an ornithological anecdote. Among others, my companion, W. Faussett, Esq., of Binbrook, related the following:—"The Lady Soapsuds, *anglicé* washer-woman, came in great perplexity to inform her mistress that three lace collars were missing from the lines where they had been hung up to dry. Various were the conjectures as to what had become of them, but all inquiries for their recovery failed, until the gardener's notice was attracted by something white upon the branch of a tree; this proved to be one of the missing collars, fluttering from the side of a Missel Thrush's nest. The other two were found imbedded in the nest when pulled to pieces." I believe this to be not an uncommon circumstance; the blackbird is

constantly in the habit of weaving extraneous matter into its nest, such as newspapers, etc., but I think it proves an act of extreme boldness in the bird, to take the collars from the lines on which many other things were hanging, which in a common way would rather tend to banish than attract it. The length, too, of the articles must have been no small difficulty during their journey through the air.—R. P. ALINGTON, Rectory, Swinhope, November 27th., 1857.

Mildness of the Season.—Mr. Pennock Newton, tailor and draper, of Fryup, had a boiling of new potatoes to dinner on Sunday last, grown in the open air at the Buscoe Beck Farm.—*Yorkshire Gazette*, January 2nd., 1858.

Proceedings of Societies.

Thirsk Natural History Society.—Botanical Exchange Club.—The monthly meeting of this society was held on the evening of Wednesday, December 2nd. Mr. J. G. Baker reported proceedings in the matter of the Botanical Exchange Club, and read letters relative to it from Messrs. Babington, Watson, and others. The following botanists were duly enrolled as members, namely, Rev. F. Addison, Cleator, Whitehaven; Rev. W. R. Crotch, Uphill House, Weston-super-Mare; Miss Gifford, Minthead, Somerset; John Hardy, 43, Radnor Street, Hulme; G. E. Hunt, Manchester; David Moore, A.L.S., Botanic Gardens, Glasnevin; Henry J. Payne, Barnsley; John Tatham, Settle; H. C. Watson, F.L.S., Thames Ditton, Surrey; John Windsor, M.D., F.L.S., Piccadilly, Manchester; E. G. Varenne, Kelvedon, Essex. He exhibited specimens from Mr. Watson, of a monstrosity of *Primula vulgaris* with metamorphosed calyx, collected near Claygate, Surrey, in 1857, and laid before the meeting the following list of species, one hundred and eighteen in number, collected or noticed by himself at an elevation of at least eight hundred yards above the sea-level, about the summit of Mickelfell, North-west Yorkshire, the highest hill in the county, in an excursion made during the summer of 1856:—

Anemone nemorosa, Ranunculus acris, Cochlearia officinalis, (alpina,) Draba incana, D. verna, Cardamine pratensis, Viola sylvatica, V. lutea, Arenaria verna, Cerastium triviale, Oxalis acetosella, Trifolium repens, Potentilla tormentilla, Rubus chamæmorus, Alchemilla vulgaris, Saxifraga hypnoides, Chrysosplenium oppositifolium, Galium saxatile, Hieracium pilosella, Taraxacum officinale, Bellis perennis, Achillæa millefolium, Campanula rotundifolia, Calluna vulgaris, Vaccinium myrtillus, V. vitis-idaea, Gentiana verna, Veronica serpyllifolia, V. officinalis, V. chamædrys, Thymus serpyllum, Prunella vulgaris, Rumex acetosa, R. acetosella, Empetrum nigrum, Juncus

squarrosus, *Luzula campestris*, *Scirpus cæspitosus*, *Eriophorum angustifolium*, *Sesleria cærulea*, *Poa annua*, *Festuca ovina*, (vivipara,) *Nardus stricta*, *Polypodium vulgare*, *Allosorus crispus*, *Cystopteris fragilis*, *Aspidium aculeatum*, *Lastrea filix-mas*, *L. dilatata*, *Asplenium viride*, *Blechnum boreale*, *Lycopodium clavatum*, *L. alpinum*, *L. selago*, *Andræa alpina*, *A. rupestris*, *A. Rothii*, *Sphagnum cymbifolium*, *S. acutifolium*, *S. cuspidatum*, *Dicranum pellucidum*, *D. flavescens*, *D. scoparium*, *Distichium capillaceum*, *Trichostomum flexicaule*, *Tortula tortuosa*, *Encalypta ciliata*, *Schistidium apocarpum*, *Racomitrium aciculare*, *R. fasciculare*, *R. heterostichum*, *R. lanuginosum*, *R. canescens*, *Orthotrichum eupulatum*, *Pogonatum alpinum*, *Polytrichum commune*, *P. juniperinum*, (alpestre,) *Aulacomnion palustre*, *Bryum polymorphum*, *B. nutans*, *B. Wahlenbergii*, *B. pseudo-triquetrum*, *B. inclinatum*, *B. capillare*, *B. julaceum*, *B. Zierii*, *Mirum hornum*, *M. undulatum*, *M. punctatum*, *Bartramia fontana*, *B. pomiformis*, *B. ithyphylla*, *B. arcuata*, *Sphlaechnum sphaericum*, *Fissidens adiantoides*, *Antitrichia curtipendula*, *Isoetecium myurum*, *I. myosuroides*, *Climacium dendroides*, *Hypnum plumosum*, (alpinum,) *H. rutabulum*, *H. prælongum*, *H. catenulatum*, *H. heteropterum*, *H. cuspidatum*, *H. Schreberi*, *H. tamariscinum*, *H. splendens*, *H. triquetrum*, *H. loreum*, *H. squarrosum*, *H. fluitans*, *H. revolvens*, *H. commutatum*, (condensatum,) *H. molluscum*, *H. undulatum*, *H. sylvaticum*. Of these, two of the Mosses, *Bryum polymorphum* and *Hypnum catenulatum*, are new to North Yorkshire.

Mr. J. H. Davies noticed the following unrecorded stations for muscological rarities, in each case exhibiting specimens from his own or Mr. Baker's collection:—*Dicranum spurium*, Hedw.: North Yorkshire; plentiful in boggy places on Pilmoor; first noticed by Mr. Baker in the spring of 1857. Aberdeen, Ben-na-bourd, Braemar, July, 1854, A. Croall. *Campylopus brevipilus*, B. and S.: North Yorkshire. I am indebted to the kindness of Mr. Wilson for specimens of this species, which has only been gathered in Britain once before, and that many years ago, collected by himself in moderate plenty, with *Dicranum spurium*, in an enclosed piece on the Flaxton side of Strensall Common, September 30th., 1857.

Tortula papillosa, Wils.: Gloucestershire; trees near Cheltenham, 1857, H. Beach. North Yorkshire, on a tree near the mere at Searbro', Sept., 1856, John Nowell. On willows with *T. latifolia*, Sowerby Ings, near Thirsk, 1857, J. H. D.

Hypnum irriguum, H. & W.: North Yorkshire. Some time back Mr. Wilson wrote to me that he had found some fragments of this moss intermixed with examples of *H. radicale*, which I had sent him from the Holmes, near Thirsk, but I have not since been able to find it there. Subsequently Mr. Baker ascertained that specimens which he had collected on the north side of the Yore at Tanfield, belong to this species; and that

the moss recorded as *H. ochraceum* in "Suppl. Flo. Yorks.," from "stones in the Swale, below Topcliffe Bridge" should be referred here.

Hypnum ochraceum, Turn.: North Yorkshire. In the small stream that descends from Easterside to the Rye, at Laskill Bilsdale, 1856, J. G. Baker. New to the riding, vide Supra.

Hypnum exanulatum, Bryol. Eur., *H. aduncum*, Bryol. Brit.: Lancashire. Wet places in Cliviger, 1853, John Nowell. West Yorkshire; bogs at Widdop, near Heptonstall, 1855, and in a small bog at Fell Beck, near Pateley Bridge, with young fruit, April, 1854, John Nowell. Cottingley moor, near Bingley, Dr. Carrington. At an elevation of about five hundred yards on the south-eastern slope of Ingleborough, near Gaping Gill Hole, 1855, J. G. Baker. I believe that this species has not yet been ascertained to occur in the North Riding. It is certainly not common in the county, as stated in "Suppl. Flo. Yorks.," so that it is probable that *H. aduncum*, H. & J., (*H. commutatum*, var. *condensatum*, Wils.) was confused with it.

Orthotrichum phyllanthum, B. & S.: Kincardineshire, Laurencekirk, 1854. A. Hutton. North Yorkshire; trees near Ingleby Greenhow, 1856, W. Mudd. Thorns at Mill Bay, near Scarbro', John Nowell. Specimens collected by Mr. A. O. Black, in Forge Valley, appear also to belong to this species.

Mr. H. Ibbotson exhibited specimens of *Apera spica-venti* from two new north-east Yorkshire stations, observed by himself last summer, namely, cultivated fields at Suett Carr, near Sutton-on-the-Forest, (in the neighbourhood of the locality recorded by Archdeacon Peirson, in the "Original Botanist's Guide,") and at Catton, near Topcliffe.

The Querist.

In "The Lady of the Lake" occurs the following:—

"A feeble and a timorous guest,
The fieldfare framed her lowly nest."

I have great confidence in Sir Walter Scott as an observer of Nature—no naturalist can read the "Lady of the Lake," for instance, without; but is he not mistaken here as to the fieldfare's nesting, in Scotland even? I am aware that some few instances have occurred of its breeding in this country. But, again, in the same poem—

"Like summer rose,
That brighter in the dew-drop glows."

I profess myself no poet, and cannot say how far "poetic license" may lawfully extend, but is it not the case that the dew-drop glows or glistens in the rose, rather than the rose in the dew-drop?—F. O. MORRIS, Nunburnholme Rectory, December 11th., 1857.

CHARACTERISTICS OF COMMON BIRDS.

BY O. S. ROUND, ESQ.

(Continued from page 30.)

BESIDES those birds which are commonly about our path, as we wander in the country, or even make the more limited tour of our garden, there are others no less common, which we must, however, go somewhat out of our way to see, and whose home is removed from the ordinary haunts of men; and perhaps this observation chiefly applies to the waders and Ducks, although there are also denizens of the moor of whom it is equally true. Almost the earliest remembrance I have of studying the habits of the feathered tribes is connected with the solitude of the secluded brook or lonely pool, those quiet unmolested nooks which one comes upon occasionally in large covers, either formed by the nature of the ground, and thus hollows filled with water, from the situation of their levels, or enlarged portions of brooks that steal along in sinuous ways amongst the depths of the wood. If these be extensive, that is, covering an acre or two in extent, as is sometimes the case, when we suddenly come upon them it is not uncommon to hear a splash, and see the rings in the water's surface, arising from the sudden displacement of a portion of the fluid by the plunging in of some object—it may be a rat, you think—perhaps it is, but if you sit yourself down amongst the bushes, and keep quiet for a short time, you will perceive a dark object stealing gently out of the thick rushes or flags, and a small black head, for you seldom see much more, is soon disclosed, and almost simultaneously some two or three more appear in different parts of the pond, generally near the edge, or out of the thickest of the weeds; if you still remain quiet, a little more of the objects is seen, for they are sufficiently cautious, and the identity of the Dabchick, or Little Grebe, (*Podiceps minor*,) is complete.

These little creatures are as amphibious as the Otter, (*Lutra vulgaris*,) and are covered with such a thick coat of oily plumage and down, that they have only to shake themselves to be dry enough; not that I ever saw them out of their native element except when shot, and then they were as dry the next moment, except perhaps near the vent, as if they had been hay-making.

The male is sometimes of a very rich sienna brown, and always, I should say, smaller than the female; and their feet are, as is well known, of a peculiar construction, that is, palmated and admirably formed for natation; although like those of the Divers, (*Colymbi*,) they fold up quite flatly when drawn back to take the stroke. How they manage on land I cannot speak so particularly, as all I have seen them execute in this

particular, is a crawling in the long herbage at the margin of the water, although I should imagine from their shape and the position of the feet, they are capable of standing erect, after the manner of the Penguins.

On the occasions above referred to, I perceived that the young of the Moor-Hen, (*Gallinula chloropus*,) might be easily confounded with the Dabchicks, but if seen near, of course the length of the leg at once distinguished them. In these situations it is not uncommon for the Teal, (*Anas crecca*,) to find a retreat with its tiny brood, for Gilbert White well designates them as "minute yet well-fledged wild-fowls." It would seem that the smaller ducks either get the feathers sooner, or arrive at that stage of existence when they become fully plumed, 'long before they attain anything like full growth, and this is probably a provision for their preservation, in the same way that all wild animals are more precocious than tame ones. Young ducks, however, are pretty well protected during their non-age, by the situations in which they are bred, and I have found it extremely difficult to see them, although I knew that I ought to do so, from their extreme similarity to the decayed water-plants amongst which they were. This difficulty of distinguishing wild animals from the surrounding herbage, is wonderfully exemplified in the Snipe, (*Scolopax*;) and I remember when a boy, sharp-eyed as I was, being continually unable to see them sitting just before a staunch old pointer, by whose movements I always knew that her game was not far off. I did indeed on one occasion catch a Snipe, (*Scolopax gallinago*,) before her nose; and a friend of mine knocked down and bagged a Jack Snipe, (*Scolopax gallinula*,) with a small horse-whip, his dog pointing it by the road-side as he was out riding.

The Woodcock also is remarkable in this particular, and is I suppose the most difficult creature to see amongst the dead fern-brakes which he almost always chooses to sit in. These birds are difficult to shoot, because they are very quick and uncertain in their flight, and I have heard a friend of mine often relate a splendid double shot made by his uncle, who is a dead shot, at two Woodcocks which they flushed in a thick wood; one went almost straight upwards through the thick branches, but although lost to sight, the fatal charge followed so unerringly through stick and leaf in the direction he was going, that down he came amidst a shower of twigs and leaves. The other meanwhile cut in and out amongst the stems of the trees, but, alas! these were equally insufficient to shield *him*, and the opportunity seized of a glimpse between two stems, brought him also to earth at a long shot.

I took some pains at one time to obtain good evidence on the subject of the Great Snipe, (*Scolopax major*,) and compared notes with many professed Snipe-shots who had spent their lives in the bogs, but could

never make out clearly that they had ever obtained a specimen, although this perhaps is not at all conclusive, or going to prove that they had not shot such a bird, when we consider the carelessness of preserving specimens which is always observable amongst real sportsmen who are not naturalists. This I have seen often instanced by drawing the attention of such men to the subject, by begging for the first clean-killed bird they got, and this at once produced something worth having, which would doubtless otherwise have been crammed in amongst a congeries worthy of a battle-field, and so made unrepresentable and unpreservable; but I quite excuse this, for even with the greatest care, it is difficult to prevent the feathers getting hurt; the best thing I know of is a sheet of cotton wool, which weighs nothing, and an old silk handkerchief, first plugging the throat and nostrils with the wool, and wrapping the bird in it and then in the handkerchief, it cannot come to much harm.

Snipes, the Heather-bleater or Whole Snipe, breed a good deal in the southern counties of England, more indeed I am confident than people generally imagine; I am speaking now of those localities which are in summer comparatively deserted by them; for their habits are quiet and their nesting recondite; but an old man whom I knew in old times, and who was a regular peat-cutter and bog-trotter, often discovered their nests, and brought me the eggs, which bore a great resemblance to those of the Lapwing, (*Vanellus cristatus*), and not very inferior in size;* in fact, unexpectedly large for the size of the bird.

The Jack Snipe, (*Scolopax gallinula*), arrives in the autumn in the inland bogs with great regularity; and I remember my brother remarking that on the same day in each year, (it was, I think, the 19th. of September,) he always first saw and generally shot a Jack Snipe, which did not last him the autumn to pop at, as it is said to do some people.

Quails, (*Coturnix vulgaris*), are very uncertain in their visits, and can hardly be regarded as common birds in England. I have found them in all parts of the country—on the heath, in cover, and in the stubble, and always singly, although I remember a gentleman shooting two brace in one day, in the parish of Langley, Bucks., not far from Uxbridge. They have much the appearance of a Squeaker, or very young Partridge. I have often seen them for sale in Hungerford Market, London, both dead and alive, the latter, no doubt, an importation from the continent.

I find that I have so much still to say on this general subject, that I must conclude for the present.

Pembroke Square, Kensington, January, 1857.

(To be continued.)

* This is quite a mistake.—F. O. MORRIS.

THE LINCOLNSHIRE COAST.

BY F. M. BURTON, ESQ.

In the early part of last August I visited several places on this coast, with a view to naturalizing, and as so few, who can make their choice, ever think of going to so barren a locality, a short account of its products may not be uninteresting.

At Mablethorpe, about seven miles from Alford, I found several shells in great abundance, such as *Tellina solidula*, *Syndosmya alba*, *Mactra Stultorum*, and *Solen siliqua*. They inhabit sand and mud at low water, and the several species are easily distinguished by the different marks they make in the sand. The burrow of *Tellina solidula* is always indicated by a small track from three to four inches long, as if cut by a blunt knife, at one end of which it may invariably be found buried. That of *Syndosmya alba* is usually a slight eminence under which it lies. *Mactra Stultorum* buries itself from four to eight inches deep, and makes a small hole in the sand, about the size of a pea, out of which it sometimes protrudes its siphon; while the common Razor Shell, (*Solen siliqua*), bores down sometimes to the depth of two feet or more, and is easily discovered by a hole about as big as a bullet, round which may generally be observed the marks of the drops of water it has lately spouted up. Besides these I found *Syndosmya prismatica* not uncommon, and a few *Syndosmya intermedia*, also *Tellina tenuis*, *Solen pellucidus*, *Mactra elliptica*, *Nucula nucleus* and *radiata*, *Velutina levigata*, *Trophon clathratus*, *Donax anatinus*, *Cylichna obtusa*, *Cardium pygmaeum*, *Artemis exoleta*, *Pholas candida*, and enormous single valves of *Pholas crispata*; the white variety of *Pecten varius*, *P. tigrinus*, and *Mya truncata*, besides species of the genera *Trochus*, *Natica*, *Nassa*, and others. Sea-weeds and zoophytes were scarce. The common *Flustra foliacea* sometimes came up in the dredge, which was remarkable for having no scent, a quality which I have found it invariably to possess elsewhere when alive.

Vast quantities of *Acalephæ* were floating about; the *Rhizostomæ*, conspicuous for their rich purple tinge, and each retiring tide left numbers a prey to the little hopping scavenger *Talitrus locusta*, which swarmed at high-water mark. The star-fishes were represented by the common *Uraster rubens*, *Solaster papposa*, *Echinus sphaera*, and *Amphidotus caudatus*, and the only interesting specimen I found among the Crustacea was *Sulcator arenarius*, and it was rather abundant on sandy ridges laid bare at low water, lying in a little hollow just big enough for its body; and to judge from the number of empty holes, and the quantity of feathered footprints round them, it is evidently esteemed a delicacy by Ring Dotterels and other shore birds.

Cleethorpes, at the mouth of the Humber, I also visited, intending to dredge there, but as oyster-catching is the staple fishing of the place, I tried in vain to get a boat. The men could not understand my going out for anything but oysters, and that they did not like, so I was forced to content myself with the shore, and rely on their promises to bring me back all they could find. Most of the inhabitants of the place are brought up to this kind of life, and at the beginning of every week they set off, returning at the latter end of it, when each boat-load is shot out on a separate tract of ground marked out with tall stakes, visible at high water, and for which they pay a rent of ten shillings an acre. The oysters are measured off in tubs, each of which contains about a thousand, and is worth twenty shillings. The boys, before they are old enough to dredge, gather cockles on the shore, which they sell for one shilling a peck.

The oyster-beds are laid bare at spring tides, and an opportunity now occurring, I walked down for the double purpose of seeing them, and to collect whatever shells might be uncovered at low water.

Trochus cinerarius and *umbilicatus* and *Chiton cinereus* were abundant; I found also some remarkably fine foliated specimens of *Purpura lapillus*, and at high-water mark *Trochus tumidus*, *Mangelia rufa*, *Lacuna crassior*, *Led-caudata*, *Fusus antiquus*, *Cypræa Europæa*, *Buccinum undatum*, *Scrobicularia piperata*, and several others. On this part of the coast there are large marshy tracts of ground, called Fitties, fretted with little salt pools, and covered with a vegetation of thrift, sea lavender, and other marine plants, over which the sea flows at high spring tides, forming a great resort of wild-fowl, both for breeding and in the winter season. Every hole and pool here I found filled with the little *Rissoa ulvæ*. They especially frequent the ground where it is damp, crawling over the slime, and clinging to every dead shell and refuse weed. The more marshy parts of the Fitties abounded with Redshanks, Ducks, and sea-birds of many kinds. The Common and Lesser Terns were especially abundant; some of them kept continually wheeling about above me, with their incessant whistling scream, now and then darting down with great rapidity to within a few feet of my head. The Lesser Black-backed Gulls stood solemnly and stiffly on the little eminences of sand, and took to flight long before I got near them. The Oyster-catchers flew backwards and forwards in small flocks, keeping in a line like Ducks, and settling as far out to sea as possible, wherever the retiring tide left the ridges of brown sand bare, while countless clouds of Dunlins and Sandpipers swept along the coast.

The Oyster-catchers may sometimes be seen in immense flocks on our flat muddy shores. I remember once at Hunstanton, on the Norfolk side of the Wash, sitting on the cliff for upwards of an hour, as the evening was coming on, and watching these birds returning from feeding on the

marshes near Lynn; flock after flock went past, and as some of these living lines, to judge from appearance, were certainly not less than a mile in length, some idea may be formed of their prodigious number.

The lower part of the Fitties, which appeared at a distance of a bright green colour, was covered with the jointed glass wort, *Salicornia herbacea*, which is there gathered for samphire, and used for pickle. Each little plant was covered by black crawling *Ulvæ*; some of them so thickly, as to present the appearance given to the tops of broad beans and other plants when infested by the black *aphis*. In fact these little insignificant molluscs actually gave a colour to the ground for miles, so very abundant were they, and the shore was strewn everywhere with their dead shells. Outside the marshes, left dry by the spring tides, I found a quantity of *Syndosmya tenuis* and *Cylichna obtusa*, and a good deal of drift wood, bored by *Pholas crispata*, several of whose shells I got out entire, and in fair condition. These specimens were of the usual size, not half so large as the single valves picked up at Mablethorpe, a variety I have also met with at Hunstanton, but a double specimen of which I have never yet seen.

Uppingham, Rutland, October 14th., 1857.

NATURAL HISTORY OF NUNBURNHOLME.

BY THE REV. F. O. MORRIS, B.A.

(Continued from Vol. vii., page 271.)

THE Rectory House stands a little out of the village, westerly, near the middle of one side of the glebe land, which consists of about ninety acres, in the form of a square, with the exception, or addition, of one small square field behind it. Two kitchen-gardens and the flower-garden, with the churchyard, the latter a small square north of the house, give the same form of a square to the whole of the premises, if taken in connection with it on one side, and with a small orchard on the other, towards the south.

In the first instance I intend to speak of the different birds, beasts, plants, fishes, reptiles, and insects, which we have noticed in and about our own flower-garden, etc., that is to say the square plot just spoken of, close to the house, and afterwards of the productions of the remainder of the parish. I am almost surprised myself when I think how much so small a space has produced; but, in the first place, when wild creatures are not disturbed, but encouraged, and, in the second place, when people use their eyes to observe them, they will see more things than are "dreamt of" by those who have no sight but for the glaring objects which please an acquired and unnatural taste.

But our flower-garden—now our flower-garden is the prettiest flower-garden in England—to my taste, at least. I will endeavour first to describe it to you: no, I will not do so at once, but bit by bit, in connection with the several species which give to each separate part a never-failing pleasure of association. I shall, then, in the first instance, I repeat, give an account of the birds, beasts, insects, plants, fishes, etc., found, and to be found, within the narrow limits of the Rectory garden, and shall then enlarge, widening out from this centre of the parish, like the circle caused by the stone thrown into the lake, on the productions of the parish itself. Fishes! you say, what fishes can you have in a Rectory garden? Why, my good friend, the great ornament of our garden is a running stream which winds all along one side of it, in view of several of the windows of the house. The house! yes, an idea just occurs to me; I have a sketch of the house made by a friend, and a very good likeness it is, and you shall have a fac-simile of it, so that you shall see, as it were, before your eyes the residence of the author of the “British Birds,” any one but the “Great Unknown.” Author, indeed! who would have ever thought of my becoming an author, and one so favourably received too, by the public! Excuse, good reader, the passing feeling of satisfaction, nay, not passing, it is one which will be a gratification to me as long as I live. Who would have thought that my fondness for “Nature” in my school-days, and my then untiring hunts after birds and butterflies, should have led to such an unexpected result!

But stop! I said in brief that the Rectory I have and hold is one exactly suited to me, and myself, in some degree, I would hope, to it, and now further to shew this, as how desirably situated it is for my convenience, comfort, and happiness in various ways, it has occurred to me that I may here make a digression, from which, not after the manner of *Tristram Shandy*, I shall duly return, and first give a short account of my birth, parentage, and education:—before going on about the place, why not say something of the person? If I have been right in supposing that my readers may take an interest in seeing what my residence is like, why may it not be supposed that he who dwells in it may, albeit that he owes the distinction of his position as a successful author, far more, he feels, to the kindness of his readers than to his own merits, come in for a share of the like curiosity?

May it please you then, ladies and gentlemen; I was born (I will be as brief as possible) on Lady Day, March 25th., 1810, and was married on New Year's Day, 1835. My great great grandfather, Owen Morris, was of Welsh, that is of Ancient British descent, the original stock of the country before Saxon, Dane, or Norman had set foot on the island, and we still bear the arms of *Elystan Glodrydd*, founder of the Fourth Royal Tribe of Wales, quarterly with those of his son *Cadwgan*, or *Cadogan*.

But to come somewhat nearer home, to shew, as I have already mentioned, how desirably situated the Rectory of Nunburnholme was and is for me, and how that in the words of Sir Walter Scott, in the preface to "Marmion," speaking of his then residence at Ashestiel, "according to the heartfelt phrase of Scripture, we 'dwelt among our own people,' and as the distance from the metropolis was only thirty miles, we were not out of reach of our friends."

My grandfather, Lieutenant-Colonel Roger Morris, lived at York, and some of my oldest and most pleasant remembrances are associated with the ancient city, which is only some sixteen miles from me on one side, with a railway all the way from our station a mile and a quarter off. In another direction I am only some two dozen miles from Burlington Quay, with a railway for half the distance, where reside my mother, brother, and two sisters. In another, fifteen from Hutton, near Malton, where lies my principal landed property—not so large as I could wish. In yet another, thirty-six miles, by railway all the way, from Ripon, in the West Riding, where I have a married sister living, (as was another in the opposite direction, at Hull, but since removed,) in which division of the county an uncle, Commander Amherst Morris, R.N., formerly lived at Baildon, near Bingley. So again, first cousins, and first cousins once removed, near Thirsk and Bedale, in the North Riding. And, lastly, about thirteen miles from Beverley, the county town of the East Riding, with a railway for the first four miles, where lie the remains, in the Minster churchyard, of my father, the late Rear Admiral Henry Gage Morris, R. N.

I happened to attend the last sessions but one at Beverley, and took the opportunity of walking down to visit my poor father's grave. There was already a person, a stranger to me in the churchyard, and to my somewhat surprise he was standing on my father's tomb. I went there myself, but made no remark: after a while he said, "Ah sir, this was a most remarkable funeral!" I did not enlighten him as to who I was, and asked for an explanation, though I knew beforehand what he would say. "Sir," he said, "the gentleman who lies here was borne to the grave by his own six sons!" I then said, "I know it—I was one of them, the eldest." Forgive, good reader, the tributary memorial.

But now to proceed to the matter in hand. It is, I believe, generally considered to be the fact, and is indeed no doubt the fact, that the ownership of any land extends downwards as far as the centre of the earth. That is to say, that you have a right to dig and to delve as you please to that depth, in search of buried treasures or the Philosopher's Stone. By parity of reasoning I conceive that you have a right to all that is above you, as far as you can go to claim it, or can reach by the help

of scientific means. This being the case, I begin my Natural History with the Wild Goose, which may often be seen up above over our heads flying back in the early dusk of the evening to the Humber, or some water, after having fed during the day among the stubbles on the Wolds. I conjecture that the species is the Pink-footed Goose, (*Anser brachyrhynchus*,) for not only was the only one that has been brought to me, having been shot, of this kind, but I think there is reason to believe that most of the flocks we see are the same. Indeed, Mr. Arthur Strickland, in letters to me, contends that this is the—the only—common or commonly supposed common species; and that the so-called Common Wild Goose is, if not purely apocryphal, a very rare bird.

(To be continued.)

Entomology.

LIST OF LEPIDOPTERA OCCURRING IN THE COUNTY OF SUFFOLK.

BY THE REV. JOSEPH GREENE, M.A., ASSISTED BY THE REV. H. HARPUR CREWE, M.A.,
AND C. R. BREE, ESQ.

[The portions of these papers contributed by Mr. Crewe and Mr. Bree, are signed with the initials C and B respectively. N.B. at the head of a paragraph signifies that the remarks are made after those of Mr. Greene.]

(Continued from page 39.)

31. *E. lanestris*.—Very abundant in the neighbourhood of Brandeston, the hedges being quite full of the large, tough, glutinous webs spun by the larvæ. The cocoon (like the egg of a small bird) is well deserving of attention, and is quite a pretty object. The insect remains in the pupa state for apparently any length of time without dying. I have had them three years myself; and I learn from a correspondent that he has had them as long as nine!

32. *T. cratægi*.—Rare. A few larvæ taken at Playford. I think the best way to find it is to examine the hawthorn hedges with a lantern in May and June.

N.B.—The larva of this insect is polyphagous. I have seen it upon birch, hazel, hawthorn, and crab. It is very fond of sunning itself. The egg is laid in the autumn, and does not hatch till spring. It is of a rich chesnut colour, paler at the base, which is flattened. When looked at through a glass it reminds one very much of a ripe acorn. It is covered with the down of the parent moth. For the eggs, from which the description and that of *L. monacha* are taken, I am indebted to the kindness of Mr. Rodgers, of Rotherham. (C.)

33. *P. populi*.—Common. The larva of this insect varies much in size and appearance. It is flat and depressed, lying at full length upon the trunks

and branches of trees, to which it clings with great tenacity. It closely resembles the larva of *C. nupta* (though of course much smaller) in its habits and appearance. It seems to be polyphagous. The perfect insect is a very strong and active flyer, and soon injures itself.

N.B.—The larva of this insect may at once be recognised by its orange belly. It will feed on almost any tree. I have myself taken it upon birch, elm, alder, hawthorn, willow, and oak. In confinement it requires plenty of air, and is very apt to die when changing its skin. The egg is clay-coloured, spotted with black, and having a black spot encircled by a white ring at the base. When first hatched the young larva will feed freely upon the young leaves of the hawthorn. (C.)

34. *L. rubi*.—Extremely common in the larva state on Kesgrave heath. It (the larva) hibernates, as is well known. Vast numbers must fall a prey to ichneumons, as I did not observe a single specimen on the wing, and all the larvæ I kept produced a dipterous insect, each containing from four to six of them.

35. *L. quercus*.—Also common. The larva appears willing to feed on anything and everything. I have even found it on laurel.

36. *L. callunæ*.—As I quite agree with Mr. Weaver, in considering this a distinct insect, I am happy to be able to enumerate it among the Lepidoptera of Suffolk. I met with *one* larva only, at Brandeston. It was taken the first week in June, 1855, having evidently hibernated. It was then about two inches in length, slender, greyish brown, with blue rings, and very hairy. It was full fed by the end of that month, and the perfect insect did not appear till the end of the July in the following year, having been thirteen months in the pupa state. It was a male, and did not differ much in appearance from *Quercus*, excepting that it was much more richly coloured. At page 113 of the "Substitute," is a communication from me on this subject, which I am ashamed to say, abounds with mistakes, and I am anxious to correct them here. I there state that the larva of *Quercus* turned to a *pupa* at the end of August. I should have said that the insect emerged from the pupa at that time. How I could have made this blunder, I cannot conceive. There are also several inaccuracies in that communication respecting the larva of *Callunæ*. I need not enumerate them here, as the statement given above will be sufficient to set them right. Now, unless I am greatly mistaken, *Quercus* completes its transformations, in England at least, in twelve months, that is, the eggs are hatched in the autumn, the larvæ hibernate, spin up at the end of June, and the perfect insect appears in July and August. But, not to mention the difference in the larvæ, *Callunæ* requires exactly double that period to arrive at maturity, remaining a whole year in the pupa state alone. When Mr. Weaver first broached the idea, that his Scotch specimens were a distinct species, it was answered, I believe, that the difference of climate and soil sufficiently accounted for the variation in the habits and appearance of the insect in its different stages. That the habits of the same species will often be very dissimilar in Scotland to what they are in England, no one will deny. In proof of this I may mention the following circumstance:—Not long since that intelligent and accurate Entomologist, Mr. Chapman, of Glasgow, wrote

to me, saying, that he thought I erred in asserting that Mr. Stainton had made a mistake in making the larva of *Flavicornis* occur in September; (Manual, page 176,) adding, that he himself always took it in that month, or in August. Now, adhering as I do, to my former statement, that, in England, the larva is found in June, and never in the autumn, we can only explain this difference by the difference of climate, and, in this instance the explanation is sufficient. But clearly it does not apply to the case of *Quercus* and *Callunæ*. Were this latter (call it a variety, or whatever you please,) confined to Scotland, the answer about climate, etc., might suffice. But it is *not*, having been taken in Suffolk, and also, I understand, in Cornwall; and I think there cannot be much in common between Scotland and Cornwall. I am afraid I shall have appeared tedious to some, in writing at such length upon this subject, but I really think that the matter ought to be decided one way or the other; and if it be settled that *Callunæ* is a species, let us give the honour to whom it is due—that indefatigable collector, Richard Weaver.*

N.B.—I strongly incline to the opinion that this insect is only a variety of *Quercus*. Certainly the difference in shade of colour does not give it a right to specific distinction, or we should at once, upon the same grounds, give the same rank to the varieties of such species as *Angerona prunaria*, or *Hibernia defoliaria*. I have one well-marked ♀ of this so-called species, but I have seen a great many of both sexes in which the difference in markings certainly was not sufficient to constitute a distinct species. Mr. Greene's remarks about the difference in time of the metamorphosis are however interesting, and I think deserve the attention of collectors. I quite join in Mr. Greene's wish to give all honour to a well-known collector and indefatigable naturalist like Mr. Weaver; but claims like these must never induce us to commit ourselves to endorse the too common inclination of almost all naturalists to establish specific distinction, without the strongest and most indisputable proof. (B.)†

I cannot yet convince myself that both the supposed larva and perfect insect of this so-called distinct species are not varieties of *L. quercus*. I, like my friend Mr. Bree, had an opportunity the other day of seeing a long series of both ♂ and ♀ which had been bred this season in Scotland; and had I not been previously told that they were *L. callunæ*, I could never have supposed them to be anything but *L. quercus*, as in many of them there was not the slightest apparent difference. The larva of *L. quercus* not unfrequently goes on feeding till July or August, and in this case the perfect insect does not appear till the corresponding month of the following year. Those larvæ also which spin up at the end of June, sometimes remain more than twelve months in the pupa state. I can vouch for both these facts from my own experience. I have now before me on the table, (Dec. 30th.,) a very lively pupa, the larva of which spun up at the end of June. It appears to me, therefore, that the

* The above communication from Mr. Greene reached me before the appearance of Mr. Harding's paper in the "Zoologist."—ED.

† Since the above was written, intelligence has reached us of the death of Mr. Weaver—an event which all British Naturalists will deplore.—ED.

length of time which the supposed larva of *L. callunæ* remains in the pupa state, is no proof of its being a distinct species. If any Entomologist will tell me, that from a batch of eggs laid by a ♀ *L. callunæ*, he has raised a brood of larvæ, *all* of them having *blue* rings, and *all* of them remaining twelve or thirteen months in the pupa state, I shall then feel inclined to believe that it is a distinct species; but till then I must, I fear, remain, if not an unbeliever, at any rate a sceptic. (C.) *

37. *O. potatoaria*.—Very abundant of course. The larva hybernates.

38. *S. carpini*.—Common on Kesgrave heath, where I not unfrequently found the balloon-shaped cocoons attached to the heather.

39. *E. versicolor*.—Though not fortunate enough to meet with this insect myself, I feel assured that it must occur at Kesgrave.

40. *C. ligniperda*.—Common in the larva state. Its presence, when very young at any rate, can easily be detected by the frass. There was a poor, old, solitary hawthorn in a field near Playford, the trunk of which was quite riddled by them, and upon removing the bark the young larvæ, varying in size from half to one inch, were to be seen snugly coiled up, in preparation for the wintry season. Do they *feed* during the winter? It has always struck me as very wonderful, how short a time suffices to bring this large insect to maturity, when it has once changed to a pupa, bearing in mind that the larva requires three years to attain to its full growth.

41. *Z. Æsculi*.—One larva at Brandeston, but it unfortunately did not live.

42. *Hepialus humuli*.—Common.

43. *H. lupulinus*.—Very abundant.

44. *H. sylvinus*.—Not uncommon in my neighbourhood. (B.)

45. *H. hectus*.—Very common in woods near Stowmarket. (B.)

46. *L. testudo*.—Very rare. One beaten from oak at Playford.

N.B.—This insect appears the last week in June and the beginning of July. It is not uncommon in the Kentish woods. The best way to get it is to beat the low boughs of the oaks into an umbrella. The moth falls and shams death. It must either be pinned or put into the chloroform or laurel-leaf box at once, for as soon as it is touched it begins jumping about like a parched pea, and soon utterly ruins its appearance. It is no use whatever putting it into a pill-box. (C.)

47. *C. spinula*.—Very abundant. This pretty little insect is very partial to light, and on entering the room almost immediately attaches itself to the window-pane, where it will remain immoveable for hours, with its wings folded just like the roof of a house.

N.B.—This insect is double-brooded, appearing in May and again towards the end of July and beginning of August. I have beaten its singular-shaped reddish brown larva off hawthorn, mountain-ash, and alder, in September and October. (C.)

* Since writing the above, I have read Mr. Harding's paper in the December "Zoologist;" but with all due deference to his well-known experience, the claim of *L. callunæ* does not appear to me to be yet clearly established.

(To be continued.)

Honesty and Dishonesty.—I read an article in the "Zoologist" of last year written by you, and as I fear much mistrust has gone abroad, will trouble you with one or two remarks. This is a very bad feeling to cherish in society of any kind, and I believe a great drawback to science. I long to see each collector, rich or poor, working hand in hand, without that selfishness that you would have seen prevalent at Lewes last season, when thirteen collectors, all on one spot after *Empyrea*, were running over each other, and caught looking at each other's sugar, which was not pleasant to the feelings; and it is that which gives distrust. Dishonesty has all its weapons of warfare. Then these collectors call on seven or thirty persons, as the case may be, and they do not tell the same tale to all; so when their customers meet, they compare each other's story as told, and alas! too often find something wrong. This creates suspicion, and I suppose those whose corns have been trodden on, feel they have a right to speak out freely. This I do not blame, for if I had any suspicion any insect I had from a friend was not British, I would crush it directly. My sole object in writing to you is to give a practical hint as to the necessity of gentlemen helping poor men, who are striving to obtain their bread by capturing insects, so long as they are honest; and when found out in dishonesty, then let them be exposed in public works. I give you an instance of my own experience while in pursuit of knowledge under difficulties. I hope any digression will be overlooked, as I want nothing but to shew that working men have done something for cabinets. In 1853, I captured one hundred and thirty *Diptera orion* near Ipswich. June 8th. took one, three next night, twenty-six next, seven next, twenty-seven next, and so on till the end of June. Wind, south, was at all times most favourable. I took *S. conspicuaria* at Raydon Wood in 1851. I saw one *V. antiopa* feeding on sugar with *atalanta* in the centre of Raydon Wood; it glided on to the end of the wood, and then settled on a gate-post, from which it flew off above the oaks. A week after that my friend Mr. C. Eaton took one on Nacton Heath at sugar—this is important. I have taken *G. c-album* on Nacton Heath, as well as *N. senex*. I have taken *C. ridens* at light in April, by hanging up a sheet in Bentley Wood. I have taken *P. dysodea* near Ipswich. The *Athalia* which you reported my having taken in Suffolk, I beg to tell you now I took at Maldon Wood, in Essex—about two hundred that year. I brought home several in muslin, and turned them out at Clubs Heath as I went home to Ipswich, and they have since been taken there in great numbers.—GEORGE KING, 85, Lower Union Street, Torquay.

[We can assure Mr. King that honest men, however poor, will at all times receive the utmost encouragement and assistance we can afford them. The dishonest trader in insects however, whether rich or poor, will ever find us his most uncompromising enemy. We will have no communication, or hold any terms with men who commit the fraud of imposing foreign insects upon their customers for British specimens. No amount of pleading, for bread even, shall induce us to swerve from this course. We hold it to be the duty of every man who lays claim to the character of scientific, to assist us in the performance of this duty. English collections as such are becoming tainted with that

suspicion, which, if not checked, will destroy their character as truthful representatives of a British Fauna. Those who commit these frauds must see that there can ultimately be but one result, viz., a union of all honest collectors, for the purpose of exchanging British species, with an annual subscription sufficient to cover all expenses, and a stringent rule to purchase no insects at all.—Ed.]

C. Hippothoe.—I thank you for your kind hint respecting the notice of Mr. Crewe, which I beg you the favour to answer, as it was quite an omission and mistake of Mr. Edward Newman. I went to his office, and showed him the five old *Dispars* collected many years ago, by an excellent old collector who is now dead; captured on Whittlesea Mere. Mr. Garrod saw them when I was in Ipswich; I had not got them when I called on you. I know of a person in the fen who reported that he took one hundred and fifty in the year 1856. I believe the other insects were collected by me this year. It would injure me much to let this mistake in the name go uncorrected. I see Linnæus called *Dispar Hippothoe* according to Mr. Doubleday's list. I wish you to thank Mr. Crewe for his kindness.—GEORGE KING, 85, Lower Union-Street, Torquay.

T. fimbria.—It seems to be the popular idea that the larva of *Triphæna fimbria* feeds exclusively upon *primrose*. Now this, like most other democratic opinions, is wrong. Two years since my old friend Mr. Hawker and myself took at least fifty of this larva, by lantern-light in April and May. In no one single instance did we find them feeding upon *primrose*, (though the woods were full of it,) or upon any low-growing plant. They were always upon the underwood, from two to four feet from the ground, and fed indiscriminately upon white-thorn, black-thorn, beech, hazel, willow, and sometimes upon dogwood. In the day-time this larva conceals itself upon the ground, and no doubt often selects the overshadowing leaves of the *primrose*, foxglove, etc., for its hiding-place. I have known a specimen reared upon the latter plant; and I think it most probable that it also occasionally feeds upon *primrose*, but certainly as far as my own experience goes, it prefers the undergrowth of trees and shrubs. The best time for larva-hunting by lantern-light is from eight to ten o'clock, p.m.; and on a fine warm evening, from the middle of April to the middle of May, it is most exciting work for an Entomologist.—H. HARPUR CREWE, Stowmarket, February 13th., 1858.

Bostrichus bispinus.—I have obtained lately above fifty specimens of both sexes of this insect from the Traveller's Joy, *Clematis vitalba*, which I have collected in this neighbourhood; so that it would appear to be abundantly distributed wherever the *Clematis* is found. They may be detected by observing the stems which are pierced, and are generally found near the joints.—W. C. UNWIN, St. Anns, Lewes, February 11th., 1858.

Lithosie at sugar.—I have often met with *L. complanula* and *griseola* at sugar. At Darent Wood, last July, I took about a dozen specimens of *L. miniata* at sugar, besides several others flying. I mention this fact as there

seems great doubt whether the *Lithosidæ* are attracted by sugar or not.—E. G. BALDWIN, Albany House, Barnsbury Park, Feb. 8th., 1858.

Do the Bombyces feed at sugar?—Upon this subject we beg to copy the following from a letter with which we have been favoured by Mr. H. Doubleday. There is certainly no anatomical reason why the *Lithosiæ* should not feed, as they have a spiral tongue, and the mouth is altogether more developed than in the other genera of this division of Lepidoptera. The fact that they do feed is, we think, now clearly established.—ED.—“I have very frequently seen the *Lithosiæ* at sugar on the trunks of trees—*complanula* and *griseola* in abundance, and *miniata* not unfrequently. I have also seen *C. elpenor* hovering over sugar here; and Mr. English, who went to the fens to collect insects for me, some years since, tells me that it was very plentiful there over the sugar which he put out. I frequently used to sugar the trunks of some young lime trees in the field adjoining our garden, and I have taken *Cossus ligniperda* three or four times on these trees at night; whether the sugar did or did not attract them I cannot say; they were always running about the trunk, but I never saw one at night on a tree that was not sugared, although do doubt they might be found upon willows.”

Bombyces at sugar.—I have been much interested in your papers in “The Naturalist,” with the detailed list of Lepidoptera occurring in Suffolk, which would seem to be a land, entomologically, flowing with milk and honey. I should think your *L. helveola* must have come to the tree on which your gardener took him for the *bona fide* purpose of regaling himself on the “sugar.” I have repeatedly taken both *G. rubricollis* and *L. griseola*, the latter in extreme profusion, at sugar in Cambridgeshire; and with respect to *C. ligniperda*, a friend of mine, Mr. Bostock, has, and on more than one occasion, taken both it and *Charocampa elpenor* at sugar. I one evening took a fine *L. stramineola* on a spray of black-thorn not six inches from a sugared tree; and from the stupid manner in which he allowed himself to be easily boxed, I am induced to believe that he had already paid a visit to the intoxicating sweets close by him.—MURRAY A. MATHEWS, Raleigh, near Barnstable, February 1st., 1858.

Cambridge Entomological Society.—The first Anniversary Meeting of this Society was held at the Secretary's Rooms, on the evening of Friday, Feb. 5th., 1858. The President, C. C. Babington, Esq., occupied the chair. After the reading of the Minutes, and proposing the names of some new members, J. G. Bonney, Esq. was elected by ballot a Corresponding Member of the Society. The officers of the Society having resigned their respective posts, the same officers were re-elected unanimously to hold the same positions as before, viz., C. C. Babington, M.A., F.R.S., President; J. W. Dunning, B.A., M.E.S., F. Barlow, M.E.S., and T. Brown, Vice-Presidents; A. F. Sealy, M.A., M.E.S., Treasurer and Secretary. A vote of thanks to the several officers was then carried unanimously, for their able conduct during the past year. The President then read his address on the occasion to the members. After a few words of advice concerning the government of the Society, he reviewed the foundation

and progress of the Society, and congratulated the members on its success, the general good attendance, and the very numerous and valuable specimens exhibited during the year. He then pointed out the difference between a mere collector and an Entomologist, urging the one to seek a genuine claim to the title of Naturalist, and encouraging the other to increase his knowledge by the study of books, and more especially by the study of Nature herself. He pointed out the absolute necessity of making the Classification of Insects a study; and, in conclusion, admirably pointed out the evils of bargaining between brother-collectors. "Give," said he, "as liberally as you can; give to all who desire to receive for the purpose of properly using your gifts. There is no higher gratification that you can derive from your collections than thus giving. But avoid at all times the trading spirit which has taken possession of so many Entomologists. Never consider what and how much you are to receive in exchange. Set not insect against insect. Calculate not that one specimen of some species is worth two of some other, or those of a third. You may be sure that the liberal giver will always be the plentiful receiver. Consider only how you may confer pleasure upon your friend, and he will assuredly try to give similar pleasure to you." The President concluded his address by thanking the members for the confidence they shewed in him by re-electing him as President.

A. F. SEALY, Hon. Sec.

70, Trumpington Street, Cambridge.

SYSTEMA NATURÆ.

BY THE REV. F. O. MORRIS.

(Continued from page 235, Vol. vii.)

Otaria Hauvillii, Cuv. Less. Fisch.
Schinz.

Otaria coronata, Schinz. Desm. Less.
Fisch. Griff.

Otaria de Lalandii, Cuv. Less. Schinz.

Otaria chilensis, Schinz. Joh. Müller,
Wieg.

Otaria Lamarii, Müller, Schinz.

PHOCA.

Phoca proboscidea, Desm. Schinz. P.

leonina, Linn. Fisch. Schreb. P.

Ansonii et Coxii, Desm. P. dubia,

Fisch. Macrorrhinus proboscideus,

Fr. Cuv. Mirounga proboscidea,

Griff. Cystophora proboscidea, Nils.

Phoca monachus, Herm. Schinz. P.

albiventer, Bodd. P. bicolor, Shaw.

P. leucogaster, Peron. P. leptonyx.

Griff. Pelagius monachus, Fr. Cuv.

Phoca vitulinus, Linn. Schinz. P. lit-

torea, Thienem. P. variegata, Nils.

P. scopulicola, Thien. Calocephalus

vitulinus, Fr. Cuv.

Phoca caspica, Nils. Schinz.

Phoca barbata, Schinz. P. leporina,

Lepesch. P. albigena, Pall. P.

nautica, Pall. Calocephalus barba-

tus, F. Cuv.

Phoca annellatus, Nils. Schinz. P.

equestris, Pall. Calocephalus dis-

color, Fr. Cuv. C. hispidus, Schinz.

Fr. Cuv. Fisch.

Phoca Grœnlandia, Schinz. P. ocean-

ica, Lep. P. dorsata, Pall.

Phoca grypus, Schinz. P. ochotensis,

Pall. P. hispida, Schreb.

Phoca lagura, Schinz. P. albicauda,

- Less. Fisch.* *P. Pilayi*, *Less.* Cal-
ocephalus lagurus, *Fr. Cuv.*
Phoca leptonyx, *Blainv. Schinz.* *P.*
Homei, *Less.* *Stenorhynchus lep-*
tonyx, *Fr. Cuv.*
Phoca Weddellii, *Schinz.* *Otaria Wed-*
delii, *Less.*
Phoca cristatus, *Schinz.* *P. mitrata*,
Camper. *P. leucopla*, *Thien.* *Stem-*
matopus cristatus, *Fr. Cuv. S.*
mitratus, *Less.* *Cystophora borealis*,
Nils.
Phoca Chorisii, *Schinz.* *P. tigrina*,
Less. *P. punctata*, *Encycl. Angl.* *P.*
maculata, *Encycl. Angl.*
Phoca seriaceus, *Schinz.*
Phoca testudinea, *Shaw. Schinz.*
TRICHECHUS.
Trichechus Rosmarus, *Linn. Schreb.*
Schinz.

ORDO V.—MARSUPIALIA.

FAMILIA I.—RAPACIA.

THYLACINUS.

- Thylacinus cynocephalus*, *Schinz. T.*
Harrisii, *Temm.* *Didelphis cynoce-*
phala, *Harris.* *Dasyurus cynoce-*
phalus, *Geoff.*

DASYURUS.

- Dasyurus ursinus*, *Geoff. Tem. Schinz.*
Didelphys ursinus, *Harris.* *Sarco-*
philus ursinus, *Fr. Cuv. Fisch.*
Dasyurus macrourus, *Geoff. Fisch.*
Schinz. *Viverra maculata*, *Shaw.*
Temm. Schreb.
Dasyurus Maugei, *Schinz. D. Maugei*

et *D. viverrinus*, *Geoff. Schreb. Tem.*
Desm. F. Cuv. Fisch. D. maculatus,
Geoff.

Dasyurus Geoffroyi, *Gould. Water.*
Schinz.

Dasyurus hallucatus, *Gould. Schinz.*

PHASCOGALE.

- Phascogale penicillata*, *Geoff. Schreb.*
Desm. Schinz. *Dasyurus penicilla-*
tus, *Geoff.* *Didelphis penicillata*,
Shaw. *Petrogale penicillata*, *Gray.*
Phascogale melas, *Schinz.*
Phascogale Swainsonii, *Water. Schinz.*
Phascogale flavipes, *Waterh. Schinz.*

(To be continued.)

Miscellaneous Notices.

Change of Colour in the Bullfinch.—I have a Bullfinch which has turned a bright black from the natural colour.—SAMUEL BROWNE, the Vicarage, Dudley, December 8th., 1857.

I conclude that this is from its having been fed on hemp-seed: it is not an unusual change.—F. O. M.

The Avocet, (R. Avocetta.)—I have recently preserved a very fine specimen of this bird for Mr. Guteridge, of Faversham, Kent, shot close to the town. These birds were a few years since rather abundant in this neighbourhood.—JAMES GARDNER, 52, High Holborn, London.

Cuckoos Building a Nest.—At the latter end of April and the commencement of May we found a nest in the course of building, and not having seen such a nest before, we watched it, and had the satisfaction of seeing a pair of Cuckoos, (*Cuculus canorus*,) busily engaged constructing it. The birds were watched for many days by several persons, and unfortunately

attracted the attention of some boys, who threw stones at them, and eventually drove them away. The nest was built at the bottom of a hedge, in a small clover field, and was a bulky mass of hay and dried grasses; it was about nine inches in diameter, though the opening was only three inches. The birds had just commenced lining the nest with moss when driven away. The clover field was situated at the bottom of Woodhouse Ridge, near Battye Wood.—H. MARCH, JAMES J. BROADHEAD, No 1, Skinner Lane, Leeds, 9th. December, 1857.

Anecdote of a Sparrow.—A curious circumstance occurred to my wife some days since, as she was walking in the vicinity of this place. She observed a group of Common Sparrows, (sooty enough,) discussing that which to them was doubtless a treasure, though not so in our eyes. As she approached of course they took flight, but to her surprise, one of the number, after just rising from the road fell down again, and shuffling along as it were on his head, pitched two or three puddings, to use a common expression. She immediately picked it up, and carried it about in her hand for some time, considering that it was in a fit, and expecting that it would every moment give up the ghost, as it lay still, with half-closed eyes, panting sides, and its feet strangely contracted. However, suddenly a sort of struggle took place, and having ejected what appeared to be water, it waked up, became brighter, and speedily took flight, settling on an adjoining tree, and she saw it no more. I leave it to those who are more learned than I am in the diseases of birds, to say *hinc ille lachrymæ!*—O. S. ROUND, Pembroke Square, Kensington, December 18th., 1857.

Partridges eaten by Hedgehogs.—Some years ago my brother had a brood of young Partridges eaten by some Hedgehogs we kept in the garden.—JOHN BROWN, Salisbury, January 7th., 1858.

European Bittern, (Botaurus stellaris.)—A fine specimen of this bird was shot by a gentleman yesterday, on a piece of marshy ground near Terregles House. Some time since one was shot near the same place, by Mr. Mc'Kenzie, Barnhill. The dismal booming of the Bittern in the dreary marsh at sunset, is now among the things that were, and this beautiful bird promises soon to be among our extinct species.—G., Dumfries, January 9th., 1858.

Mildness of the Season.—There are no want of paragraphs in the various papers just now, in proof of the mildness of the season. November and December have been quite spring months here. Summer flowers are still in bloom, and bees are occasionally seen amongst them. There is an apple-tree in a garden at Collin, with a fine second crop on it; and during the last week, the Bat has several times been seen sporting on our streets,

to the amusement of the boys, who gave it rather a rough reception. A pair of Canaries have built and are hatching in the house of Mr. Hastings, Thornhill. The Mavis is in full song; and the Crows, though not actually building, seem to be making every preparation for the coming spring.—Idem.

As another proof of the mildness of the present winter, I would mention the fact of my having gathered the flowers of the *Cornus sanguinea* in the hedges between Woolwich and Eltham, during the week succeeding that of Christmas.—W. R. TRAVIS, Blackheath, February 1st., 1858.

On the 30th. of December, I saw a Bat flying early in the evening, about the church at Sutton-on-Derwent. I had several times seen quite a flock of bees in this village, within a few days of that date.—F. O. MORRIS; Nunburnholme Rectory, January 11th., 1858.

Setting Lepidoptera.—With reference to Mr. Greene's instructions in the art of setting insects, and Mr. Bree's note thereon, I wish to say for the benefit of all entomological readers, that while I coincide with Mr. Greene as to the excellence of the pins No. 8 and No. 10, (though I would use the latter for more kinds than he recommends,) I do not agree with him at all as to No. 7, and also would substitute No. 13 only, for both his No. 11 and No. 12. Mr. Bree too does not say for what sorts it is that he recommends, in the note, Nos. 5 and 15 as the most useful sizes. Mr. Greene also omits to state, for the benefit of beginners, the depth the boards themselves should be of, but it may be inferred sufficiently nearly. The plan is not a new one, except as to the way of first moving the wings forward by means of a piece of wetted paper, which may perhaps be better than the more common and more easy mode of fixing them in their place, with a minute pin stuck through them, or may not. Mr. Greene does not mention the mode of setting on turned woods with cotton thread, but the effect is better, and the process more quickly performed.—F. O. MORRIS.

Felt instead of Cork for Insect Drawers and Boxes.—The other day I received a box of European lepidoptera from Professor Zeller, of Zurich, and the box was lined with felt instead of cork. The paper within it was perfectly smooth, as much so as in any cork-lined box. The pins, too, go into it with the greatest possible ease, but they do not seem to be, indeed they are not, held so tenaciously as by cork. Nevertheless, although the box came so far, not a single insect was loose in it; but I must mention on the other hand that they were placed on a thin stratum of cotton wool, spread over the paper,—an invaluable recipe, by-the-bye, I may add, in all cases of sending entomological boxes by the post. I should also say that the insects were, that is, many, not all of them, fastened in likewise with pins stuck crosswise over their bodies; but, as I have

just said, as this was not the case with all, their safety, notwithstanding the deficiency in the consistence of the felt, cannot be altogether attributable to this precaution. On the whole, it must be an excellent substitute for cork, particularly in "cases" where there is no moving about, and it must, I suppose, judging from the price charged, as we are informed at the railway stations, for "Groggon's Patent Asphalte Felt," namely, a penny a square foot, if I remember aright, be vastly cheaper than cork—some twentieth or fiftieth only of the price—and also laid down with much more ease and expedition, as being in a single piece. I shall be obliged to any of our readers who will give me the result of his experience on the subject, that I may "take the benefit of the act."—F. O. MORRIS, Nunburnholme Rectory, February 3rd., 1858.

Reviews.

The Poetical Works of Thomas Aird. One Volume. A New Edition.
WILLIAM BLACKWOOD AND SONS, Edinburgh and London.

HOWEVER much it may lower me in the opinion—I own I am surprised to say that I have no doubt it must be many of—my readers, I have to acknowledge, as I did in a review of a poem in a former number, that I am not in the general way fond of poetry, viz., the writings of so-called poets. With some exceptions, such as those mentioned before, "Percy's Reliques," Walter Scott, and Gray, to which I would add a few of the Oxford Prize Poems, Reginald Heber's "Palestine" for example, I think it is, for the most part, good prose, or bad as the case may be, the good spoiled, or the bad made worse.

Why should language in poetry, any more than in prose, be given only to conceal the thoughts? yet who can read (read, indeed! who can possibly have patience to read) Tennyson, to say nothing of some of the verses of Keble, or those of Longfellow, and have the least notion, without pondering them over like the most difficult chorus of the hardest of the Greek Plays, what on earth the writer means? This is not indeed much to be wondered at, inasmuch as we must often shrewdly guess that the writer did not know himself, his mind as well as his eye having been manifestly all the while "in a fine frenzy rolling."

There is a story told somewhere of a lawyer who used to write a shocking bad hand, or rather three bad ones, one which only his clerk could read after he had written it, another which only he himself could read afterwards, and a third which neither he nor his clerk could make head or tail of. In the predicament of this last category it is to me perfectly clear that most of our modern poets are. Yet surely if Euclid

begins with his axioms, postulates, and definitions, the very first rule we ought to have for good writing—and poetry, I suppose, is to be considered as the handiwork of those for whom prose is not good enough—ought to be that it should be capable of being understood, and understood easily and at once, where at least the subject is not difficult.

How refreshing then to meet here and there with a poet whose poetry has the rare merit of being understandable!—Here we have one of this class. The writer, too, is evidently one who “loves the country for the country’s sake,” and thoroughly understands the healthy enjoyment of it, and what is more to my present purpose, expresses himself, I say, in such a way as that his readers may enter into his feelings and go with him up the mountain side, or by the cool brook, along the green meadow or the shady lane, and pay with him a morning visit to a country neighbour, at the old hall, grey parsonage, gabled farm-house, or quaint cottage. This I speak, or write rather, of one of his poems, “Frank Sylvan,” for there are several others in the volume to suit a variety of tastes, as follows:—“The Holy Cottage,” “Genius,” “The Champion,” “An Evening Walk,” “The Devil’s Dream on Mount Aksbeck,” “The River,” “The Christian Bride,” “Byron,” “Belshazzar’s Feast,” “The Swallow,” “Monkwood,” “Night,” “Tales of the Siege of Jerusalem,” “Fanny,” “A Summer Day,” “The Captive of Fez,” “A Winter Day,” “Wash the feet of poor old Age,” “The Tragic Poem of Wold,” “My Mother’s Grave,” “Flowers of the old Scottish Thistle,” “The Prophecy,” “The Translation of Beauty,” “Recovery from Sickness,” “Nebuchadnezzar,” “A Father’s Curse,” “A Mother’s Blessing,” “The Churchyard,” “The Old Soldier,” “To a Young Poet,” and “The Demoniac.”

Some of these poems are just what one likes, and undeniably good poetry, and, what is still better, a manly, natural tone pervades them, and a spirit of morality, reverence, and piety. It will not however do for me after what I have said, to set myself up as a critic of poetry, but so far as I have to do so, I must fulfil that most essential part of a critic’s character, and go out of my way to find fault—no very difficult matter, good reader, with any book of human composition that ever was written. I will however be very brief; in fact there is very little fault, except as thus searched out, to find. The author seems to me too fond of the use of the word “aye,” (for “ever,”) a fault I have often seen before in the poems of others, for it cannot be right to make common use of a disused word solely for the sake of the filling up measurement. Thus on pages 9, 13, 14, 18, and 68.

There are also some words used which are unknown to me, and I should suppose to others, but that may be the fault of my ignorance and theirs, such as “pleached,” “spilth,” “swirls,” “lipping,” etc. These, however, are

minor faults, if faults they be at all. The poems, I repeat, themselves are good, very good, and the volume, a small one of 439 pages, is a capital present to make to a friend, especially in these days when "capital" of another kind bears far too much sway, and it is not every one who has the healthy tone of Mr. Aird, and fewer still, who, if they have it, can commit it to good poetry.

The last line of the volume—

"And set in the bosom of her God,"

reminds me of those of Gray—

"There they alike in trembling hope repose,
The bosom of his father and his God;"

but even if borrowed, intentionally or unintentionally, this is either a trifling fault or no fault at all, and if the one or the other, it is one committed in very good company. Thus it has been shewn, (by Dr. Doran,) that, as Bulwer has observed, "Books are magnets to which all iron minds insensibly move," and as examples of this he gives quotations to prove it.—Spenser has borrowed from Tasso and Ariosto; Merivale from Dante; Lord Bacon from Giordano Bruno; Goldsmith from Young; Pope from Milton, Shakespeare, Charron, and Flatman; Shelley from Sir Thomas Browne; Gray from Milton, Bishop Hall, and Lucretius; Byron from Burton, Dante, Waller, and Goethe; Tennyson from Anacreon; Sir Robert Cotton from the Public Record; Hacket from Camden; Rogers from Gray; Campbell from Blair and Vaughan; Parnell from Martin Luther; Sterne from Burton, Rabelais, Montaigne, Bayle, and Leightenhouse; Thomson from Homer; Moore from Waller; Shakespeare from Barnfield and Beaumont and Fletcher; Milton from Grotius, Petrarch, Dante, Ariosto, and Ramsay; Madame de Genlis from Rousseau and Voltaire; Adam Clarke from Dr. Gill; Matthew Henry from Bishop Hall; Scott from Matthew Henry; Captain Marryatt from Kendall and Gregg; Franklin from Logan and Jeremy Taylor.

"Every one of my writings," says Goethe, in the true spirit of candour, "has been furnished to me by a thousand different persons in a thousand different things; the learned and the ignorant, the wise and the foolish, infancy and age, have come in turn, generally without having the least suspicion of it, to bring me the offering of their thoughts, their faculties, their experience; often have they sown the harvest I have reaped. My work is that of an aggregation of human beings; taken from the whole of nature, it bears the name of Goethe."

"When I was a young man," says Goldsmith, "being anxious to distinguish myself, I was perpetually starting new propositions; but I soon gave this over, for I found that generally what was new was false."

"As for originality," said Byron, "all pretensions to it are ridiculous;" and Moore once observing him with a book full of marks, asked him what it was. "Only a book," he answered, "from which I am trying to *crib*, as I do whenever I can, and that's the way I get the character of an original poet."

Emerson says that an author is original in proportion to the amount he steals from Plato; and Seneca complains that the ancients had compelled him to borrow from them what they would have taken from him if he had been lucky enough to have preceded them.

There is a passage in the poem entitled "A Summer Day" I should like to quote, ("unum e multis") of the "right sort," on pages 128-9, beginning with "The Queen;" but I have no more space, and refer my readers for their satisfaction to the volume itself.

P. S.—I must draw attention to the short one entitled the "Swallow," not only for its intrinsic merit, but on account of the coincidence, undesigned, between it and my account of the Martin in my "History of British Birds."

Manual of the Land and Fresh-water Shells of the British Islands; with Figures of each of the kinds, by William Turton, M.D. New Edition, with Additions. By John Edward Gray, Ph. D., F.R.S., F.L.S., F.R.G.S., V.P.Z.S., and Ent. Soc., etc. London: LONGMAN, BROWN, GREEN, LONGMANS, AND ROBERTS. 1857.

THIS edition of the work before us comes down to the recent date just mentioned, and, in fact, almost deserves the name of a new work. It is of a convenient size for carrying about in the pocket. It contains a description of every British species, with a coloured figure of each, and indeed more than one of several. It is a work which no conchologist or collector of British Shells can do without.

The Geologist. Vol. I., No. I., January 1st., 1858. A popular monthly Magazine of Geology. Price One Shilling. London: SIMPKIN AND MARSHALL. Kenilworth: WALTER T. PARSONS.

THIS is a new Magazine on the interest of Geology, and one which seems likely to do good service to that study. It includes—1st., a leading article, by the Editor; 2nd., Geology considered with reference to its utility and Practical Effects, by the Rev. P. B. Brodie, M.A., etc.; 3rd., Abstract of a Notice of a New Genus of Crinoides; 4th., On Bone-beds and their Characteristic Fossils, by the Rev. W. S. Symonds, F.G.S.; 5th., The Common Fossils of the British Rocks, by S. J. Mackie, Esq., F.G.S., etc.; 6th., Foreign Correspondence, by Dr. T. L. Phipson, of Paris; 7th., Review, Memorial of Andrew Crosse. I remember a friend of mine

a banker, in London, who knows the place well, telling me that it is a fact that shilling and sixpenny exhibitions succeed, while higher-priced ones tell. The same, I think, holds good with books, I mean, at least, with periodical publications; in fact I have proved the truth of it in my own works. I venture to think that the Magazine before us will be another exemplification of the rule. There are two very well-executed plates in the present number.

Proceedings of Societies.

Thirsk Natural History Society.—Botanical Exchange Club.—The monthly meeting of the Thirsk Natural History Society was held on the evening of Friday, the 8th. of January. Mr. J. G. Baker reported the proceedings of the Botanical Exchange Club. The following botanists were duly enrolled as members, namely, Miss Atwood, 3, Victoria Place, Bath; J. A. Brewer, F.L.S., Holmesdale House, Reigate; W. Brewer, Reigate; T. B. Flower, F.L.S., Beaufort Buildings, Bath; A. Henfrey, F.L.S., Heathfield Terrace, Turnham Green, London; J. Linnell, Jun., Redstone, Reigate; Thomas Lyle, M.D., 314, High Street, Glasgow; J. D. Salmon, F.L.S., 174, Strand, London; W. Soper, Reigate; J. T. Syme, F.L.S., Gordon Street, Gordon Square, London. He laid before the meeting notices of the occurrence of *Nuphar pumila* in Shropshire, of *Aremonia agrimonioides*, in a naturalized condition, in Fifeshire, and a review of the first part of Bourgingnat's "Flora of the department of the Aube.

Mr. Davies described *Orthobrichum obtusifolium*, a moss new to Britain; and reported it from the neighbourhood of York, and two localities in Gloucestershire; and exhibited specimens of *Hypnum hians*, a moss new to Europe, recently discovered by Mr. Mitten, in Sussex; and of *H. speciosum* from the neighbourhood of Thirsk.

The Querist.

Drying of Plants.—Would any practical botanist please inform a novice the way in which they manage to dry and carry about with them, the plants collected during a pedestrian tour—in Wales for instance?—W. M. F., Liverpool, January 7th., 1858.

Food for the English Snake.—Would you kindly inform me how to induce the English Snake to drink milk, and also if there is any other animal food besides frogs, that they are partial to. I have several Snakes, and fear when they recover from their state of torpor, they will die unless I am able to find some other food than frogs for them, as I cannot obtain a supply.—JOHN BROWN, Salisbury, January 7th., 1858.

THE ART OF LIVING IN HARMONY.

BY O. S. ROUND, ESQ.

As we walk over Waterloo Bridge, or perhaps traverse Trafalgar Square, we see a square wire cage, with a little crowd, chiefly of boys and women before it, whilst a kind of keeper, in a brown velveteen jacket with a small stick, stands at the side in attendance, and upon a small piece of board is written, in legible characters, "The United Happy Family;" and certainly they are united in a very small space, and appear to be happy. Most of my readers know, and have seen this curious assemblage of animals, usually considered to be most antagonistic in nature to each other, and we naturally wonder how it is that cats and mice, hawks and sparrows, in short, predaceous animals and their prey should be inclosed in the same den, and not fulfil their nature by devouring each other. So, however, it is, and without inquiring into the precise mode employed to bring about so unexpected a consequence, we answer, briefly, that it is the effect of *education*. It has been made a question how the word "natural" should be understood, some insisting that it is that state in which we and all animals are born—without education; whilst others argue that it is that condition which the animal nature is capable of. Without taking either side of this dispute, it may be safely asserted that whatever capabilities have been implanted in us by the Almighty, were intended to be used, and not only so, but improved to the utmost extent to which those capabilities can be carried.

It has been found by experience that the faculties of both reasonable and unreasonable creatures can receive, retain, and turn to account certain things communicated to them either by speech or exhibition, and imitate, or even surpass, the acquirements of their teachers; and not only are these the *media* of imparting knowledge, but the very sensations, instincts, and propensities, which are implanted in them, are also enlisted in this service, and made likewise engines, the one subverting the other. In the instance which I put by way of illustration at the commencement of this paper, this subversion is fully exemplified; for although it may be said, and probably with great truth, that dogs do not worry cats by nature, yet it cannot be denied that small birds are the natural prey of hawks and owls, and rats and mice of cats, as much as rabbits and hares are the objects of pursuit of dogs, and yet in the instance referred to, all these are found in one cage.

Boys (those troublesome members of the community) generally take good care that dogs shall not want the propensity to worry the feline race, and most disgusting and cruel instances have I seen of this; but thanks to Christian legislation, there have been found those who have protected poor

pussy from her many enemies; still almost every one knows instances where a Blenheim, or a King Charles, or even perhaps a terrier, and a tabby have existed in the same house with perfect good nature and hurtlessness, (to coin a word.) I myself know a notable instance of a very savage terrier, "a fell rat-catcher," whom I have seen very much "enforced" by a cat, who would keep seizing a very short tail, which was describing a rapid curve on the surface of the rug, and yet nothing more than a vexed growl was elicited, although I own I quaked for the wolfish nature which might have been roused, but fortunately for all parties was not.

What I would aim at from all this is, that, borrowing an illustration from the "United Happy Family," it is possible not only for us so to tutor the most savage animal natures to live together in perfect harmony, but to do so ourselves. It is a great part of the contemplation of nature that it should conduce not only to our own enjoyment, but that we should endeavour by every means in our power to foster, to conduce to, and to promote that delightful order and beauty in animate, which we universally find in inanimate objects. Of course we cannot deny that throughout all nature there is the canker of evil passions, of rage, of ferocity, of antagonism, but I have shewn that it is possible to overcome this, and therefore why should it not be the aim of every one, as much as in him or her lies, to lend his or her aid to overcome it, and more than all to begin at home. We feel the curse in our own hearts, whenever there is the least occasion that calls it forth; let us therefore strike at the root of the evil, and be assured that our endeavours will be laying out capital at a very high rate of interest. It will return to us, perhaps, "after many days," but in the most unexpected and welcome manner. Kindness begets kindness, mercy begets mercy, and never let us forget that as we have the power to exercise universal goodwill, so shall we extend it to a degree which at the time we know not of. Whenever we can help, in the most trifling way, let the help be cheerfully, and above all, spontaneously given, for the motive makes the value; check the irritable risings of your temper whenever they are produced by any cause, and remember that he who conquers himself is greater than he who "taketh a city." God help me, poor erring mortal that I am, I feel how I need all this to be pressed upon myself, but I do not therefore fail to impress it upon others, for I thereby press it on myself. I have through His help been enabled, to a small degree, to practice what I preach, and I know of nothing that has so helped me as the calm contemplation of natural objects.

Go from the struggle of men into the fields on a mild day, and the true harmony there reigning will come upon you with a double zest; you will envy, in a mere wishing sense, the lark as he soars on high, not wish to bring him down with a shot; you will admire the hare as he picks his

morning meal among the bents, and not wish to turn all his innocent enjoyment to a bloody death; you will watch the insect tribes, with their painted or their gilded wings, and think how beautiful they are, and not wish them in your cabinet; in fine, you will see there may be peace in the earth of your own making. In a late paper, and in other previous ones, I have discussed the question of justifiable destruction of life; I still adhere to those opinions, and would never in my own person take life for mere wantonness, or where it could possibly be avoided. I am sure if we cultivated this spirit we should make others happier, and be happier ourselves.

Pembroke Square, Kensington, December 10th., 1857.

ON UNITY OF SYSTEM.

(Continued from Vol. vii., page 267.)

It is obvious that time and space, as manifested or expressed by the visible creation, form no part of eternity and of infinity, but may rather be termed a divergence from them; and it will also appear that the single divergence, which comprises all the natural creation, is composed of a succession of divergences, and that this law of divergence is manifest in every living being, and that the whole system appears in every part, and that every part more or less expresses the whole; also that this law extends from the beginning to the end of creation, so far as it is made known to man, and that by it all creatures are brought to one level or equality, and that this impartiality would not appear if the law of development and of progress were supreme. On various accounts it is not the purpose of the present notes to illustrate this law fully and methodically, but to call attention to the subject, and to shew the identity of the system in the Bible and in human history with that of Nature, and that the knowledge of them all is progressive, and that their mutual agreement appears to increase in proportion as the knowledge of them is equally progressive.

The fact of the Deity being eternal and infinite, and everywhere the same, and all creation being of Him, shews that an erroneous idea may be conveyed by the common expression that He made the worlds of nothing. How this Power (who fills all space) and the earthly or visible creation (which is in Him, and in which He is hidden) are consistent, is by the Bible explained partly, or as much as man can comprehend. The belief in a future and better state is generally acknowledged, but it is a fallacy (as will afterwards appear) to suppose that man, of himself, can make any progress towards that state; all his superiority, when compared with other creatures, and when compared with his fellow-creatures is final, has one

common origin, and will cease with his present existence; and not only so, but this superiority in its progress becomes more remote from a higher state. If the present creation had been ordained to originate from nothing, and to be susceptible of progress, no answer could be given to the inquiry,—Why is its perfection so limited, and why do not its various beauties co-exist, instead of the development of one of them always requiring the cessation of some other one? But it is certain that the works of the Creator, unlike the works of man, have not an existence separate from Him, but that the present or visible creation, and every part of it, is merely the middle state,—beginning in and ending in an eternal manifestation of power.

The term middle part is conventional, rather than fully expressive of the creation, for, as will appear, like as the measurements of space and the epochs of time do not add to or diminish from eternity and infinity, so the present creation does not really (as the middle part in visible objects which connects the beginning with the end) divide or come between the eternal life which precedes and succeeds it, and by which alone it exists, but may rather be termed a divergence from it; and one of the objects in these notes is to shew that the law of divergence governs all nature, and may in like manner be traced in each of its parts, and in every creature. According to this law the present world, whether collectively or individually, makes no real progress in its developments; they are all divergences, have one common origin, and their various perfections pass away by the law of degradation. Its inability to raise itself declares it to be partial, or incomplete and deficient; all its strength consists in or is derived from its beginning, which is also its end, that is, the eternal life. This Power is said to be suppressed from the foundation of the world; and though every individual plant, and animal, and higher creature derives its being and continuance from this Power, as much as a stream depends on its source, yet the life of every creature throughout the earth diverges from, and is more or less opposed to, its source, or to the same power in its eternal state, which is thus said to be suppressed. And this suppression is necessary for the natural creation, which could not otherwise exist in its various adaptations and counteractions—a time will come when the suppression will cease, and then the present creation will be changed, or be wholly renewed.

As thus the existences of all creatures do not begin from nothing, but from an eternal Power, all the divergences have their origin in Him, and He, as it were, bears them, or is answerable for them, and they will all return to or be renewed in Him, excepting the cases of responsibility, where the divergence is persevered in, though a conviction of its end may be acquired, and the being is then cut off in the divergence, or divided from the eternal source, to which the gratifications of even this life are all

owing. The return in man of his spirit or life to its source from the divergence, whereby it is set free, and is assured of possessing all things, is called a new life in him; and the beginning of this new life in man is as much out of his own power as is his natural life. This eternal life has no development in the present state of the earth, the latter being wholly adapted to its successive divergences. The nature of man leads him to suppose that in progressive nations mankind can become gradually more fitted for a higher state of existence; and if it were so, Christ, or the eternal life, would be only the end of the eternal life, and not also the beginning, and this life would continually increase in perfection; but, as it will appear, it is not so—all cases of its progress are merely divergences, and by the unity of system cannot be otherwise than so, though in each development there is an analogy to a higher state, as will afterwards be noticed.

As the spirit of life and all power proceeds from the Deity, and is in unity with its source, or pure and perfect, and as the natural life also originates in the Spirit and by Christ, it is evident that they are identical, the natural spirit being a divergence of the eternal spirit, and more or less opposed to it, and thus having its limits in all its manifestations, or in all the creatures of this world. Accordingly, it is found that the one spirit is frequently mentioned in conjunction with the other, and that the increase of one is attended with an equal decrease of the other, the one being transferred or converted to the other, or suppressed in proportion to the growth of the other. This process is as various as are the agents in whom it occurs, and may be sudden or slow, early in life or late in life, permanent or transitory, the predisposition or feeling of the want for the change being always required of the persons before they receive it. As before mentioned, this present life in every creature requires a suppression of the eternal life, being in divergence or opposition to the source whence it proceeds, and a renewal is ordained to follow this suppression, but a second renewal is not allowed in case of a second suppression.

(To be continued.)

MOSSES IN THE NEIGHBOURHOOD OF STOKESLEY, YORKSHIRE.

BY J. D.

THE under-mentioned Mosses were found in the course of a very few walks, taken for the most part with another object than that of collecting them. Perhaps an experienced Botanist—a title to which I have no claim

—may be able to judge from them of other and rarer species, which he is likely to meet with in the same localities.

I can answer for the correctness of the nomenclature, as Mr. Wilson has most kindly verified those species about which I was in any degree uncertain.

Sphagnum squarrosum.—In fruit on Kirkby Bank, but not very abundantly.

S. cuspidatum.—Pools of water on Cran Moor: abundant, but always barren.

Dicranum squarrosum.—In fruit on Kirkby Bank, by the side of rivulets: common; barren plants growing to a great length.

Leucobryum glaucum.—On the moor in Bilsdale, but always barren.

Distichium capillaceum.—Growing sparingly on Kirkby Bank, but in great perfection.

Didymodon flexifolius.—Bilsdale Moor: common.

Trichostomum flexicaule.—Growing sparingly amongst rocks on the extreme summit of Cold Moor, but without fructification.

Eucalypta vulgaris.—With the above on the highest summit of Cold Moor.

Racomitrium canescens.—Kirkby Bank: abundant near Carlton, in Cleveland, etc.

Orthotrichum pumilum.—Wood near Ingleby Greenhow.

O. Lyellii.—Wood on the left-hand side of the road leading from Great Broughton to Bilsdale, but always barren.

O. pulchellum.—Woods at Ingleby Greenhow, but sparingly distributed.

Tetradontium Brownianum.—On Sandstone Rocks on Kirkby Bank; also at the Wainstone Rocks, but not very common.

Aulacomnion androgynum.—Abundant at the Wainstone, but (of course) barren.

Bryum crudum.—Rocks on the summit of Cold Moor: bearing fruit in May.

B. Wahlenbergii.—Abundant by the side of a rivulet running down Kirkby Bank: fruit in April.

Mnium subglobosum.—Wet places on Kirkby Bank, in abundant fructification and very fine: April, 1857.

Bartramia fontana.—Wet places on the Moor; very abundant and handsome.

B. pomiformis.—By the side of the road leading from Kirkby to Bilsdale Wood, near the Wainstone Rocks.

B. arcuata.—By the side of a rivulet running down Kirkby Bank, near the Wall that divides it from Carlton Moor. I only found it in this one place, and there was no fructification, though the moss was luxuriant and handsome.

Discelium nudum.—On clay at the foot of Kirkby Bank, on the left-hand side of the Bilsdale bridle road: very scarce.

Schistostega osmundacea.—In a dark cavern at the Wainstone Rocks, growing very sparingly with *Tetraphis ovata*. Only a single patch of it, but bearing fruit in high perfection last April.

Fissidens adiantoides.—Kirkby Bank; also the variety with short setæ, mentioned by Wilson.

F. bryoides.—Very common.

Hypnum rivulare.—Stream on Kirkby Moor, but without fruit.

H. crassinervium.—Wall near the Church of Ingleby Greenhow: barren.

H. stramineum.—Abundant in wet places on Kirkby and Carlton Moors, but always barren.

H. Schreberi.—Common everywhere, but very rarely with fructification. In fruit near the Wainstone, December, 1856.

H. splendens.—Abundant in fruit by the road-side between Ingleby Greenhow and Battersby.

H. loreum.—Very common, but rare in fruit: Carlton Moor, Oct., 1856.

H. squarrosum.—Abundantly fructifying on Kirkby Bank.

H. fluitans.—In fruit in the bogs on Cran Moor.

H. commutatum.—In fruit by the side of rivulets on Kirkby and Carlton Moors.

Hookeria lucens.—In shady woods in Bilsdale: common.

NATURAL HISTORY OF NUNBURNHOLME.

BY THE REV. F. O. MORRIS.

(Continued from page 57.)

I CANNOT, however, reach the flock that cuts the air overhead in marshalled rank, under the leadership of the chieftain gander, and so am unable to speak more positively than I have done by conjecture, as to the name of the bird that I see and hear aloft. The ordinary gun, or fowling-piece, would carry but a small distance towards the "Old High-flyer." (Gone has the "London and York" stage-coach of that name from the "Great North Road" this many a day, nor ever again will its team turn in at the portals of the "Black Swan," as was its wont in the "good old times," which in like manner are fled for ever, and will never come again.) Even the rifle, whether "Enfield" or "Minie," would have but a small chance of sending its bullet "up so high," and still less would the cloth-yard arrow of the best yew bow that was ever strung by the hands of "Robin Hood or Little John," hight "Adam Bell, Clym of the Clough, or William of Cloudeslie," those archers good and true,

strike the breast of the cackling wild-goose as he is "going home" towards night. He has no fear as he steadily wings his way to the Humber or the Trent, of sharing the fate of the ill-starred eagle,

"Which on the shaft that made him die
Espied a feather of his own,
Wherewith he'd wont to soar so high;"

nor dreads that the "grey goose wing" that steers the shaft will in his kindred "heart's bluid be wet." But I must come down from this "wild-goose chase!" So much for "Number One" of the Fauna that compose the Natural History of Nunburnholme.

Number two. On the same principle that I claimed the Pink-footed Goose as a species for my Natural History of this Garden—"the Garden of England"—I might also claim the Kestrel, but I do so on a nearer view. A specimen alighted one day on the birch tree in front of the house. We have indeed a row of ivy-covered birch trees on one side of the Rectory, but this birch tree I must tell you is a very beautiful tree, and of the sort called the weeping birch—the female tree, I believe. Nothing can be more exquisite than to see its hanging sprays filled with leaves in the summer, and quivering with the gentle breeze of that time of the year; and again in winter,

"When the hoar-frost is chill
Upon mountain and rill,"

it is a lovely sight to see it sparkling in the sun with myriads of pearls and diamonds; every little branch, every smallest twig frosted over with silver, and exhibiting the new foliage of a night, which in its turn will "fade and fall away" into its component drops, and be distilled into the pure air from which it has descended.

But I have left my Kestrel standing in the cold; not that he minds it much—he will soon be gone: look at him while yet you may. There is not a handsomer bird than the Kestrel, the male I mean, for the hen bird is altogether of a different appearance, barred and mottled like a yearling. But the male, what a beautiful back he has! where can you see such a bright cinnamon colour? and how elegantly is it picked out with black crescents! He is off: how well and easily he flies. Now he hovers: away he sweeps—he is out of sight!

Number three. Within three or four yards of our drawing-room windows looking south,

(To be continued.)

Entomology.

LIST OF LEPIDOPTERA OCCURRING IN THE COUNTY OF SUFFOLK.

BY THE REV. JOSEPH GREENE, M.A., ASSISTED BY THE REV. H. HARPUR CREWE, M.A.,
AND C. R. BREE, ESQ.

[The portions of these papers contributed by Mr. Crewe and Mr. Bree, are signed with the initials C and B respectively. N.B. at the head of a paragraph signifies that the remarks are made after those of Mr. Greene.]

(Continued from page 60.)

48. *P. lacertula*.—Rare. A few specimens by beating.

N.B.—This moth is double-brooded, appearing in May and June, and again in August. The larva may be beaten from birch in July, and again in September and October. I have taken it both in the woods near Ipswich and in this neighbourhood. When full-fed it unites the edges of a leaf by a very strong web, and turns to a pale red pupa covered with a white bloom, like that of *C. diffinis*. (C.)

49. *P. falcata*.—Common. The larva feeds on birch and alder, and the insect is double-brooded.

N.B.—The larva of this insect is pale green, with a broad reddish dorsal stripe, and is studded with small tubercles, or rather spiculæ. Like that of *Lacertula* it spins the edges of a leaf together with a strong web, and turns to a dark chesnut brown pupa, somewhat similar to that of *C. duplaris*. (C.)

50. *P. hamula*.—One beaten from oak.

N.B.—Taken at Ringshall and Battisford, by Mr. W. Baker. It is double-brooded, appearing at the same time as *P. lacertula*. (C.)

51. *P. unguicula*.—Taken by Mr. W. Baker, at Ringshall and Battisford. (C.)

52 and 53. *C. furcula* and *bifida*.—Not very common, that is, not very commonly found, though empty cocoons were in profusion.

N.B.—Mr. W. D. Crotch, in his amusing paper at page 52, No. 59, of the "Intelligencer," says that he found the cocoons of both these insects on *poplar*. Now I have been in the habit of taking both egg and larva of both species for some years past, and have found *furcula* upon every species of *willow* and *sallow*, and vice versâ, *bifida* upon *poplar*, but I never found the former upon any species of *poplar*, or the latter upon *willow* and *sallow*, and I no more believe that they ever desert their respective trees, than I do that the larva of *N. dictæa* ever feeds upon *birch*, or *N. dictæoides* upon *poplar*. I have not unfrequently found the cocoons of *C. vinula* upon the trunk of an *oak*, but I never for a moment supposed that the larva had fed upon that tree, and have always found either a *poplar*, *sallow*, or *willow* close at hand. If there were any *sallows* or *willows* near Mr. Crotch's *poplar*, I can easily account for his finding the cocoons of both species on the same tree, but otherwise I am at a loss to do so. It is worth while looking for

the little black eggs of *C. furcula* and *bifida* at the end of May and in June. They are generally laid on the leaf, and almost invariably upon the upper side. Sometimes, however, they are deposited upon the twigs. The young larvæ are not difficult to rear after they have moulted once or twice. (C.)

54. *C. vinula*.—Common. I do not remember whether I mentioned in my paper on pupa digging, that the empty cocoons of this species are occasionally used by caterpillars too lazy to make one of their own; such is the case, however, and they should consequently be always carefully broken open.

55. *P. cassinea*.—Larva not uncommon, but very difficult to rear. Even supposing you obtain a pupa from your larva, which happens about once in twenty times, it is very apt to dry up, or to produce a cripple. Though I must have had one hundred larvæ of this species since I first began to collect, I am still without a female. I took about eighteen this spring and summer, and they resulted in *one* pupa. Tenderly and anxiously was this "one chick" watched over, and at length it came out on the 1st. of December, very late by the way, and produced the long-desired female; but, alas! it was a cripple! May others have better success.

N.B.—I found this larva in the spring of 1857, on oak, hazel, sawlow, and ash. It prefers, I think, the two former trees. From nine larvæ so obtained, I was fortunate enough to breed six specimens of the perfect insect in the autumn, three ♂ and three ♀. Two of them, one ♂ and one ♀ were crippled, which I attributed to my having moved those particular pupæ, a very bad plan. Their dates of appearance were, first, November 6th., ♀; last, December 3rd., ♀. (B.)

The larva is polyphagous; I have either beaten it or seen it beaten from oak, ash, elm, lime, sawlow, beech, aspen, and hazel. From the latter tree I beat seven or eight very small larvæ this spring, about the 7th. of May. In this stage of its existence the larva is a voracious cannibal; out of my seven or eight larvæ, only three were left in a very few days. About the same time, Mr. Bernard Smith was rearing a brood from the egg, and he informed me that more than half fell victims to the cannibal propensities of their comrades. This unnatural appetite seems to cease when they are about half fed. In confinement this larva requires plenty of air. If it is kept in a box with a close-fitting lid, it perspires freely and soon dies; I lost at least twenty in this way this year, and write to warn others. The egg, which is laid in the autumn, is a dull slate-colour, and is a very peculiar one. The lower part is saucer-shaped, the upper raised like the lid of a jar; between the two parts runs a sort of rim. The upper half is beautifully ribbed, the points of the ribs all meeting at the apex in a kind of knob. The lower half is also ribbed, but less distinctly. The whole very much reminds the observer of a round cut-glass butter-boat. I am indebted to the liberality of Mr. Bingham, of Newnham, for the eggs from which this description is taken. (C.)

56. *P. palpina*.—By no means common.

N.B.—I have never had any doubt in my own mind for some years past that this insect is double-brooded, as I have several times taken the larva full-fed in July, and again commonly in September and October. It feeds indis-

criminally upon the various species of willow, sallow, and poplar, which grow in this country. M. Duponchel gives lime as one of its food-plants, but I never saw or heard of its being found upon that tree. Accident has hitherto prevented my rearing the larvæ which I have found in July, so that I am unable to prove its double-broodedness from my own personal experience, but upon taking up "L'histoire Naturelle des Chenilles," by M. Duponchel and Guenée, a few days since, I found my suspicion most satisfactorily confirmed in the following words:—"This larva feeds upon willow, poplar, and sometimes also lime. There are two broods. The first brood appears in June, and produces the perfect insect at the end of a month or six weeks. The second appears in October, and does not complete its transformation till the end of April or the beginning of May in the following year."—"Cette chenille vit sur le saule, le peuplier et quelque fois aussi sur le tilleul. Elle a deux générations. Les individus de la première se trouvent en Juin, et donnent leurs papillons au bout d'un mois ou six semaines. Ceux de la seconde paraissent en Octobre, et ne deviennent insectes parfaits qu'à la fin d'Avril, ou au commencement de Mai de l'année suivante." The egg, which is white and opaque, and more raised than those of the *Notodontæ*, is laid on the under side of the leaf. I have not unfrequently reared the young larvæ from eggs thus found. I am happy to find that my indefatigable correspondent, Mr. Gascoyne, of Newark, who has so satisfactorily supplied the "only link wanting in my chain of evidence" in support of the double-broodedness of *N. dictæa* and *N. ziczæa*, has got a goodly stock of the pupæ of *P. palpina*, and fully intends to corroborate M. Guenée's remarks next season. (C.)

57. *N. dictæa*.—With this insect we enter upon a wide field of discussion, the double or not double-broodedness of some of the *Notodontidæ*. My own opinion is, that in a state of nature they are *not* so. That I have never succeeded in rearing two broods in the same year, I readily admit, proves nothing, because others may, nay, *have* done so. But still I am disposed to think this an abnormal circumstance. I ground my opinion on this fact. For years I have been in the habit of digging up the pupæ of *Dictæa* and *Camelina*. During that period I must have had at least two hundred of the former, and five hundred of the latter. Now the supporters of the double-brooded theory maintain that eggs are hatched in June, or thereabouts, and that the larvæ feed up and produce perfect insects in August and September. If this be correct, is it not singular that not *one* of the pupæ dug up in August and September, should ever appear in the perfect state till the beginning of the following summer? And yet this has been unquestionably the case with me; I have even tried to *force* pupæ obtained in August, but in vain. They have indeed appeared somewhat earlier in the *ensuing* year, but *never* the *same* year. A gentleman, signing himself F. K., "Intelligencer," vol. ii., page 172, says he found a full-grown larva of *Dictæa* some time in July, which immediately spun up, and produced a perfect insect in about three or four weeks. Was the pupa left in the open air, as in a state of nature? If not it in no way affects my argument. Again, at page 173, Mr. Naish states that "*last spring* I had two female *Dictæa*, which laid a fine lot of eggs; these appeared in the imago state the beginning of this month," that is, August. Now last

spring is a vague term, and therefore I do not know the precise date when Mr. Naish found or bred these two females. For my own part, I have never found or bred, except when forced, *Dictæa* earlier than the first week in June. Now *assuming* that this was the period in Mr. Naish's case, we have just eight weeks for the eggs to hatch, the larva to feed up, and for the insect to remain in the pupa. Without at all questioning the accuracy of this statement, I must be permitted to say that this most unusual and rapid development was, in my opinion, due to their having been bred in confinement. It is evident in this and similar cases, that the larva must have become a pupa, at the *latest*, by the middle of July. Has any "pupa digger" ever turned up *Dictæa* in July? I can confidently assert that *I* never have; I never found it earlier than the second week in August—rarely before the *end* of that month. If the experience of others coincide with mine in this respect, this fact strongly militates against the notion, that in its *natural* state it is double-brooded. But even supposing that some fortunate digger *has* turned up a *Camelina* or a *Dictæa* in July; did it emerge the same year? I feel confident that it did *not*. The argument so strongly relied upon by some, that fine and perfect specimens are found during many months of the same year, *proves* literally nothing. I have bred specimens of *Camelina* out of the same batch of pupæ, from the middle of May to the end of August. Again, it is well known that the larvæ, which in a state of nature hibernate, of some species will, when in confinement, occasionally feed up rapidly, at least *some* of them, and produce the perfect insect in the same year; for instance, *A. caja*. Yet no one asserts that *Caja* is therefore double-brooded naturally. From my own observations therefore, I am disposed to say, without, I trust, dogmatizing, that neither *Camelina* or *Dictæa* is *naturally* double-brooded. The discussion now opened will, I hope, be fully carried out in the pages of "The Naturalist," and at the same time in a friendly and gentleman-like spirit.

N. B.—In the neighbourhood of Stowmarket this insect is very uncommon. I have seen but one larva during the past season, and during a long residence here, my friend Mr. Bree, has not met with either larva, pupa, or perfect insect. The egg, which is a delicate white, is laid on the back of the leaf, and may be found from June to August. Like the rest of the *Notodonta* *N. dictæa* generally lays her eggs singly, but I once found twenty-six on one twig. The larva, though generally greenish white with a yellow stripe on the side, is not unfrequently of a dull olive brown, clouded on the back with purple. It is then often mistaken for the larva of *N. dictæoides*, but no one who has ever seen the real larva of this latter insect, can afterwards confound the two. It is quite smooth, very glossy, and of a beautiful deep purplish brown, with a bright yellow stripe on each side. The brown larva of *N. dictæa* is studded all over with numerous indentations which, though it is glossy, give it a rough wrinkled appearance. It has no stripe on the side, and the dorsal protuberance, and the warty horse-shoe plate on the anal segment, are much smaller than in *Dictæoides*. These brown larvæ are, so far as my experience goes, when first hatched green, and do not turn colour till about half-fed. When young the dorsal protuberance has the

appearance of a single red tubercle. The larva feeds on various species of poplar, and sometimes, though rarely, upon sallow. Various entomological authors mention birch as one of its food-plants, but I am convinced wrongly. I have been in the habit for some years past, of taking both egg and larva on a moor in Derbyshire, where both aspen and birch grow freely intermixed; but though I have beaten and examined each carefully and repeatedly, I never found a single *Dictæa* upon birch, nor have I ever heard a single authenticated instance of its being found upon that tree.

Mr. Stainton, in the "Manual," mentions September as the only month in which the larva is to be found; I can only say that I have several times found it full-fed as early as July, and as late as November. I have also had the larva full-fed in July, from eggs found in June, and in both these instances the perfect insect appeared in August. I thence come to the conclusion that the insect is most undoubtedly double-brooded, and it is a perfect marvel to me how any experienced entomologist can for one moment doubt the fact. Mr. E. Shepherd, "Zoologist," vol. xiv., page 5293, says in reply to Mr. Naish, that in order to *complete* the chain of evidence in favour of the double-broodedness of *Dictæa*, it must be proved that the May moths are the parents of those found in August. Now if I find a full-fed larva in July, common sense tells me that the egg which produced it must have been laid in May or at the beginning of June. My larva spins up, and the perfect insect appears in August. Therefore the moth which laid the egg in May, is the parent of the one which appeared in August. Mr. Gascoyne tells us, "Zoologist," vol. xv., page 5826, that at the end of July, 1857, he took a full-fed larva of *Dictæa*; it spun up and produced a female moth at the end of August. He put it out of doors, and a male was immediately attracted, and on the 29th. of August, she was busily depositing her eggs. The chain of evidence is therefore complete, and according even to Mr. E. Shepherd, *N. dictæa* is double-brooded.

In September, 1857, my friend Mr. Bree, had full-fed larvæ and pupæ of *Dictæa*, reared from eggs laid by a moth bred from eggs laid by another moth in May. Both these insects were bred by Mr. Naish. As this, however, took place in confinement, I shall, I suppose, be told that it is no argument in favour of my theory, as the larvæ being deprived of their usual quantum of air and exercise, were obliged to take to premature development by way of amusement. When you find a larva full-fed in July, and it immediately spins up, it cannot in the least signify whether the pupa be kept in-doors or out, for the difference of temperature is so slight, that it cannot make more than a few days difference in the appearance of the perfect insect. I have also no hesitation whatever in saying, that as far as my own experience goes, confinement does not make any material difference when the larvæ are reared from the egg. Were this the case, Mr. Stevens and myself would have bred some autumnal specimens of *N. carmelita* and *N. cucullina*, in 1854; we had then each a brood of eggs in May, and our larvæ were full-fed and spun up long before the usual time; my *Cucullina* were all spun up the first week in July, and in the wild state the larva is generally not full-fed till September, yet not a single moth appeared till about the usual time

the following year; but in the case of *Dictæa* and *Camelina*, both Mr. Naish and Mr. G. Harding, of Stapleton, and myself, found our May eggs produce perfect insects in August.

My friend Mr. Greene's remarks about his want of success in forcing the pupæ found in August, afford a strong additional argument in my favour. He found pupæ of *N. dictæa* and *Camelina* in August, and tried to force them, but failed—and why? Because they were not the produce of eggs laid in May, but at the end of June or in July, and were not intended to appear till the following spring. My *Camelina* eggs were laid in May; I kept them in confinement, it is true; they had but little air, I admit; exercise they did not want, for the larva of *Camelina* is one of the most sluggish animals alive, and will stick for hours without moving, with its head and tail up in the air. I did not force them, but half-starved them instead, and yet the perfect insects appeared in August, and were as fresh-coloured, and the females as full of eggs as the spring brood. Mr. Naish had the same result with *Dictæa*, or rather he was more successful, for his moths paired and laid eggs, from which larvæ were reared. My worthy friend, Mr. Greene, also says that he has never dug up the pupa of *Dictæa* in July, but Mr. Gascoyne and myself have both taken the larvæ full-fed in that month. It is therefore quite clear that it must turn to pupa somewhere, and if Mr. Greene will read the description of *Dictæa*, in vol. iii. of "L'Histoire Naturelle des Chenilles," he will find what may be a solution of the enigma. M. Duponchel there remarks of this larva:—"We find it at *two* periods of the year—in June and at the end of September. The first brood complete their transformation in a soft yellowish grey cocoon between the *leaves*, and produce moths in July; the second brood *enter the earth* in order to turn to pupa, and do not produce the perfect insect till April or May of the following year."—"On la trouve à deux époques, en Juin à et la fin de Septembre; celles de la première génération se métamorphosent dans une coque molle d'un gris jaunâtre entre des feuilles, et donnent leurs papillons en Juillet et Août; celles de la seconde entrent dans la terre pour se chrysalider, et n'arrivent à l'état parfait qu'en Avril ou Mai de l'année suivante."

In opposition to the double-brooded theory, instances have been quoted of the eggs of *A. herbida* producing the perfect insect in October and November; and similarly those of *A. caja*. I have also myself bred *Sm. Populi* in December, and have seen *H. pisi* bred in the same month; but these do not appear to me to be at all cases in point. These insects did not pair, and they appeared too late to do any good, if they had done so. Besides they were mere isolated instances, whereas in the case of *N. ziczac*, *Camelina*, and *dictæa*, the same result occurs year after year, and in all broods, and in plenty of time for the larvæ to be full-fed before the leaves fall. I once bred some *N. dictæa* in October and November, from autumn larvæ, but in this case I had no doubt whatever that, like Mr. Doubleday's *A. herbida*, they were premature specimens, and the ♀s were to all appearance barren.

I do not for a moment dispute what my friend, Mr. Greene, says with regard to the same batch of pupæ of *Dictæa* and *Camelina* producing moths from May till July. In the case of *Dictæa*, *Dictæoides*, and *Dromedarius*,

I know from my own personal experience that it is so, but this does not at all militate against my double-brooded theory. All I say is this, *N. dictæa*, *Dictæoides*, *Dromedarius*, and *Camelina* lay eggs in May, or the first week in June, which hatch and produce perfect insects in August; and these latter are fertile. In the case of *Dictæa*, they have been seen to pair and lay eggs, which have again produced full-fed larvæ in the autumn, and this has taken place out of doors as well as in. I also say that, as far as my own personal experience goes, confinement has little or nothing to do with this so-called abnormal state of things. Finally, after carefully weighing the *pros* and *cons*, I can come to no other conclusion than this, that both *Camelina* and *Dictæa*, *Ziczac*, *Dromedarius*, and *Dictæoides*, are naturally double-brooded. I will give my reasons for including the three last-named, when I come to them. When I wrote my papers on this subject, in the "Zoologist" for 1856, my assertions were made entirely on my own experience; since then Mr. Harding, of Stapleton; Mr. Naish, of Bristol; and Mr. Gascoyne, of Newark, have devoted themselves to the investigation of the subject, and it is peculiarly gratifying to me, to find all my assertions so fully corroborated and confirmed by the results which have crowned their efforts. It was only the other day that my friend, Mr. Bree, lent me M. Guenée's and Duponchel's work, to which I have previously referred, and there too I found, to my no small delight, all my assertions confirmed. With such an authority to back me, I feel as if I could face all my opponents, even though their name be Legion. (C.)

(To be continued.)

A LIST OF THE RARER SPECIES OF COLEOPTERA,
WHICH OCCUR, OR HAVE BEEN TAKEN IN
THE NEIGHBOURHOOD OF HARLESTON, NORFOLK.

BY J. LEEDES FOX, ESQ.

AND IN THE NEIGHBOURHOOD OF BUNGAY.

BY W. GARNES, ESQ.

[When no initial is affixed the insect has been recorded by each of the above gentlemen. The initials F and G respectively intimate that it has been observed only by the person to whom the said initial refers.]

(Continued from page 18.)

Triplax russica.—Occasionally.

Monotoma picipes.—Occasionally.

Rhyzophagus depressus.—Occasionally.

R. bipustulatus.—Rare. (G.)

Dorcas parallelipipedus.—In old ash trees. (F.)

Sinodendron cylindricum.—Scarce. (F.)

- Bolbocerus mobilicornis*.—Once taken by Mr. Muskett, several years ago. (F.)
Aphodius hæmorrhoidalis.—Frequent. (F.)
A. emarginatus.—Rare. (F.)
A. porcus.—I have taken this once. (F.)
A. granum.—Rare. (F.)
Agrilus viridis.—Occasionally in Gawdy Hall Wood. (F.)
Oömorphus concolor.—Rare. (G.)
Onthophilus striatus.—Rare. (G.)
Hister parvus.—Rare. (G.)
Teretrius picipes.—(G.)
Melasis buprestoides.—Once in Gawdy Hall Wood. (G.)
Elatér bipustulatus.—Rare.
Hypolithus riparius.—Frequent in floods.
Cryptohypnus 4-pustulatus.—Rare. (G.)
Otenicerus tessellatus.—Frequent.
C. metallicus.—Rare.
Cardiophorus equisiti.—Occasionally. (G.)
Aplotarsus quercus.—Rare. (F.)
A. rufipes.—Occasionally. (G.)
Tillus elongatus.—Occasionally.
Telephorus clypeatus.—Frequent. (F.)
Malachius bituberculatus.—Occasionally. (F.)
Thanasimus formicarius.—Occasionally. (G.)
Necrobia rufipes.—Frequent. (F.)
Ptinus pecticornis.—In an old floor in my house; I found this insect in the summer months. (F.)
P. imperialis.—Occasionally.
P. rufipes.—Occasionally. (G.)
P. 6-punctatus.—Occasionally. (G.)
Ochina ptinoides.—Frequent among ivy on oaks in Gawdy Hall Wood. (F.)
Rarely. (G.)
Tomicus bidens.—Rarely. (G.)
Cis bidentatus.—Frequent in Boleti. (F.)
Bostrichus capucinus.—Three specimens of this rare insect were taken by Mr. Muskett in this town some years since. (F.)
Hylesinus crenatus.—Under bark of old ash trees. (F.)
H. scaber.—Rare. (G.)
Dendroctonus piniperda.—Rare. (F.)
Hylastes rhododactylus.—Old broom stumps. (F.)
H. piceus.—Rare. (G.)
Cionus Blattariæ.—Occasionally. (F.)
Cossonus linearis.—Once abundantly. (G.)
Gymnaëtron Beccabungæ.—Rare. (G.)
G. Veronicæ.—Rare. (G.)
Nedys Sisymbrii.—Sometimes plentifully.
N. ovalis.—On thistles in autumn. (F.)
N. Echii.—Frequent in the Echium. (F.)

N. horridus.—Rare. (F.)

Rhinonchus 4-tuberculatus.—Scarce. (F.)

R. tibialis.—Rare. (G.)

Bagous lutulentus.—Rare. (F.)

Pachyrhinus 4-dentatus.—Scarce. (F.)

P. 4-tuberculatus, (*4-nodosus*? Ed.)—Rare. (G.)

(To be continued.)

ON THE CLASSIFICATION OF INSECTS.

BY THE NORTHERN ENTOMOLOGICAL SOCIETY.

AT the last quarterly meeting of this Society the Secretary, rather ungraciously we think, read a private letter from our friend, the Rev. J. Greene, suggesting that their proceedings should be published in this Journal as well as the "Zoologist;" a request which the meeting is reported in much the same spirit to have declined. Now we apprehend that the only motive the Editor of a Journal can have, in expressing a desire to publish these proceedings, is that of a desire to promulgate useful scientific information, and to assist the praiseworthy efforts of a body like this in diffusing knowledge.

If there is an obligation incurred on either side, we think it is almost entirely on the part of the Society, as such reports are frequently very dry reading, and occupy much space. As a proof of both these statements we refer to the ten pages and a half of the report in the February number of the "Zoologist." With the exception of the very useful paper on "Specific Distinctions," by Mr. Constantine, which only occupies a couple of pages, we do not see anything we should have been particularly anxious to publish. The list of insects exhibited cannot have much interest to those who did not see them; and the long paper by Mr. Cooke, on "Classification," as inculcating most erroneous views upon the subject on which it treats, we should think rather injurious than otherwise. We propose to take a short notice of this paper. Mr. Cooke considers that all insects should be classed according to their metamorphosis, and that the orders should be arranged, to use his own words, so as to exhibit "a gradation from a hard-bodied, strong, and well-defended insect, to a soft-bodied, weak, and defenceless one."

No one, we believe, would deny, since the subject was handled by such men as Leach, Oken, MacLeay, and Burmeister, that the metamorphosis of insects must form an important element in their classification. But we certainly little expected to find in these days any one attempting a system based on this character alone. As Burmeister has well observed,—“We thus (by the metamorphosis) obtain two chief groups among insects, which we distinguish as *Insecta ametabola* (imperfect metamorphosis) and *metabola* (perfect metamorphosis.) Both commence a new development in the organization of the mouth.....Thus each group has *Insecta haustellata* and *Insecta mandibula*. Each of these groups may be farther subdivided, according to the form of the larva, the structure of the wings, and the entire internal organization; and these constitute their orders.”

We believe the above quotation to contain the only sound principles upon which the Classification of Insects can be attempted. These principles, as Burmeister observes, are deduced from the idea of an entire insect, and he places the orders thus, from the lowest to the highest:—

AMETABOLA.—*Hemiptera. Orthoptera. Dytotyoptera.*

METABOLA.—*Neuroptera. Diptera. Lepidoptera. Hymenoptera. Coleoptera.*

Mr. Cooke, however, copying Dallas, places the *Diptera*, which have two wings and apodal larvæ, before the *Lepidoptera*, which have four wings, attain a great size and strength, and whose larvæ are highly organized!

He then separates the *Trichoptera* from the *Neuroptera*, and constitutes them into a distinct order, including the *Panorpidae*, *Raphidiidae*, *Hemerobidae*, *Sialidae*, and *Phryganidae*, and places them among the METABOLA, while he classes the rest of the family as *Neuroptera* among the *Hemimetabola*.

The second view which Mr. Cooke propounds in his system of classification, is that all predaceous insects should be placed at the top of each order, and the weak and defenceless ones last. In the very outset, however, Mr. Cooke meets with a fatal difficulty. He gets over it, however, in a manner not very ingenuous. Of course if the principle is good as to insects, it must apply to the other classes in animated nature, and Mr. Cooke observes,—“Thus in *Mammalia* the lion, the tiger, the leopard, etc.; in the birds the eagles and falcons will claim the highest rank; and indeed such is the position, or nearly so, commonly assigned them.”

So thinks Mr. Cooke. Cuvier, however, who must be permitted to have known something of Zoology, placed the bimana, the quadrumana, the cheiroptera, (bats,) and the insectivora, (the moles and shrews, etc.,) all before the carnivora. We apprehend most Zoologists will think Cuvier right.

In attempting to carry out his views in the arrangement of the orders in the class *Insecta*, Mr. Cooke is not more successful. The *Coleoptera* placed by almost every systematist from Aristotle to Dallas, at the head of the class, is of course a favourable starting-point. The *Geodephaga*, a predaceous family, is at the top. But this is evidently not solely on account of their carnivorous nature, but because *as a whole* they form a type of the order. The *Scarabæidae* have as great or greater strength. The *Lucanidae* far exceed them in size, are “harder-bodied,” and more strongly defended. The *Staphylinidae* are a strong, active, predaceous race: and the larvæ of the *Coccinellidae* and others are highly carnivorous, and yet they are all placed far below the *Geodephaga*.

In the *Lepidoptera* Mr. C. thinks the *Papilionides* properly placed, but he expresses this correct thought at the sacrifice of his own principles; for surely *Sphinx*, *Acherontia*, or *Cossus* are much stronger, harder-bodied, and better defended than the soft and gentle butterfly? while many of the larvæ of the *Noctuae* are well-known cannibals—such a charge, we believe, never having been preferred against a *Papilio*. The *Hymenoptera* deserve a second place according to Mr. Cooke, because one of the family supplies us with “wax and honey.” We take the liberty of urging a similar claim for *Bombyx mori*, which supplies us with silk.

When he arrives at the *Diptera* Mr. C. becomes indignant, and hurls a

missive at Mr. Walker, from the effects of which, we fear, that able naturalist will hardly recover. "It would be just as rational to place a *rat* at the head of the *Mammalia*, as a domestic nuisance like the *flea* at the head of the *Diptera*!" Mr. C. is unlucky in his simile, for Cuvier places the shrew, which is a more insignificant creature than the rat, before the lion or the tiger; and the flea is placed among the *Diptera* upon Mr. C's. own principles, namely, the analogy of its metamorphosis to that of the *Tipulidæ*.

In the *Neuroptera* Mr. Cooke's difficulties increase, for he has actually added four families of smooth-winged, true *Neuropterous* insects, to the only hairy family, the *Phryganidæ*, under the order *Trichoptera*! but the reason for this innovation becomes apparent when we remember that the above four families are carnivorous.

We think we have said enough to convince our readers that Mr. Cooke's attempt at a Natural System of Insects is most unfortunate. We do not think papers like this are likely to advance the science of Entomology. On the contrary, we think they do much to give foreign naturalists an unfavourable impression of the philosophic tone of thought which prevails in this country. We are sorry to see that the Curator of the Warrington Museum has announced that he has arranged the insects of that Institution upon Mr. Cooke's "hard and soft" system.—ED.

A LIST OF THE INSECTS OBSERVED IN THE SOUTHERN PART OF THE COUNTY OF SUSSEX.

BY W. C. UNWIN, LEWES.

No. III.—INCLUDING THE STRATIOMIDÆ, TABANIDÆ, AND ASILIDÆ.

(Continued from page 41.)

STRATIOMIDÆ.—WESTWOOD.

Beris clavipes.—Appears to be rare. Found in July by sweeping in meadows near Kingston, and on Hamsey Common.

B. vallata.—Not common. Obtained by sweeping aquatic plants, by the sides of ditches in the Lewes Levels, in July.

B. chalybeata.—Rare apparently, but probably only so from our not having discovered its metropolis. Taken in a rough field near the Plashet Wood, in June, 1855.

Stratiomys longicornis.—Rare. Taken off *Umbellifera* in Oxsettle Bottom, near Mount Caburn, in July, 1854; and again in the same locality last summer.

S. chamæleon.—Very uncommon in this district, although it is said to be one of the most abundant of the genus in some localities. A very interesting account of this insect, on its preparatory state, is given in Mr. Dallas's "Elements of Entomology."

S. argentata.—Rare. Taken near Seaford, on the coast, off the Wild Carrot, (*Daucus carota*), in July.

S. tigrina.—Of frequent occurrence, and examples are often met with in our entomological rambles during the summer months.

S. viridula.—May be said to be common. It is very partial to the flowers of the Marsh Thistle, (*Carduus palustris*,) in the Lewes and Newhaven Levels, in July. It delights in the hottest sunshine. The beautiful green of the abdomen, which is so bright in living specimens, generally fades into a brown after death.

Oxycera trilineata.—Rare. In my own garden in July.

Nemotelus uliginosus.—Not uncommon in the Lewes and Pevensy Levels, and frequents the flowers of Marsh Ragwort, (*Senecio aquaticus*,) in July. It is a somewhat sluggish and inactive insect.

N. pantherinus.—Not so common as the preceding, but associates with it, and is found in the same locality and at the same period. Both species are very beautifully marked insects, with their almost invisible transparent wings. They appear to be invariably marsh species.

Chrysomyia formosa.—Common. A very beautiful and distinct species, occurring very generally in this district, and rather plentifully from June till September. It is very fond of settling and basking on the leaves of shrubs in hedges and gardens.

C. polita.—Equally common with the last species; its habits are similar, and may be found in the same localities. The ♂ and ♀ vary a little in point of colour—from a golden green to a tinge of copper-colour, and having the violaceous tinge in the female.

Sargus cuprarius.—This common but beautiful insect is ornamented with brilliant metallic colours. It is very inactive in its habits, and appears to delight to rest on the foliage of plants, rather than on their blossoms. It affects pleasure-grounds and gardens, and may frequently be seen in the neighbouring lanes enjoying the sunshine, from June till August.

S. nebeculosus.—Common in this district, but so closely allied to the last species, that I almost doubt if it is not only a variety; its habits and the localities it frequents are the same.

S. bipunctatus.—Once taken near Ilford, in August, 1855, but it does not appear to be so general as the two preceding species. It is equally beautiful in colour.

TABANIDÆ.—LEACH.

Tabanus bovinus.—Rare, and by far the largest and most conspicuous of the British *Diptera*. Taken occasionally on the Downs frequented by cattle, near Rottingdean, Kingstone, and elsewhere in this district, in August and September.

T. autumnalis.—Very common generally, and usually appears in the hot months of July and August, and indeed throughout the autumn, from whence no doubt its specific name. The *Tabani* are generally known by the names of Breeze or Horse-fly. All the species are of a very strong and robust form.

T. tropicus.—Less common than *Autumnalis*, although not of unfrequent occurrence near Lewes and the immediate neighbourhood, in July and August. Usually found settling on the ground in unfrequented pathways, enjoying in

common with many of the *Diptera*, the heat of a summer's sun. It has on one or two occasions been taken off the early blossoms of the ivy.

T. luridus.—Rare. It has occurred near Ashcombe, near Lewes, and at Firle, in the autumnal months.

T. rusticus.—May be considered rare in this district, having been taken only on one or two occasions. In some of the other counties it is reported as being one of the most common species inhabiting this country.

Hæmatopota pluvialis.—This insect occurs in plenty generally, and more particularly in the Weald of Sussex, on the forest district of Tilgate and Ashdown, in July and August. It is very troublesome, and is most persevering in its attacks.

Chrysops cæcutiens.—Not by any means common, although it has frequently been taken in the Lewes Levels, in July and August, settling on cattle when grazing.

C. relictus.—Scarce. Once taken at Firle, and near Lewes in July. This insect does not appear to be so common in England as the preceding species, but it is said to be common in the north of France.

ASILIDÆ.—LEACH.

Asilus forcipatus.—Not uncommon. Has been found at the foot of the Downs near Lewes, and also near Rottingdean.

A. æstivus.—Rare. The borders of corn-fields in Oxsettle Bottom, near Mount Caburn, on *Umbellifera*, in June.

A. crabroniformis.—This very fine and handsome species occurs more frequently than either of the others, and generally is met with on the Downs, and mostly in pairs in the month of August. It is a strong and powerful insect.

Dioctria flavipes.—Of frequent occurrence on *Umbellifera* on sunny banks in the neighbourhood of Lewes, in June and July.

Leptogaster cylindricus.—Occasionally taken in this district, but not common.

(To be continued.)

IN the last number of "The Naturalist," Mr. Morris makes a few remarks on my method of setting Lepidoptera. He objects, in the first instance, to the sizes of the pins which I recommend. This must ever be a matter of taste with each individual collector, and Mr. Morris is, of course, at perfect liberty to use the sizes he prefers himself, but when he recommends to his readers the total abandonment of Nos. 11 and 12, and the adoption in their place of No. 13 only, I would ask him whether he possesses such insects as *A. atropos*, *S. ligustri*, *S. convolvuli*, etc. In my specimens of these species, the head of a No. 13 pin would disappear in the thorax. I cannot but think that Mr. Morris stands alone in recommending such a size only. He complains, secondly, that I have omitted to state, for the benefit of beginners, the proper depth of the boards. I should have thought Fig. 3 would have explained this knotty point with sufficient clearness for the comprehension even of a child.

Mr. Morris farther remarks, that my plan is not a new one, (I never said it was,) except as to the way of first moving the wings forward by means of a piece of wetted paper. This is no part of my plan; my words are, "move up the fore wing to the required height, and having a little slip of paper on the moistened tip of the middle finger of the left hand, hold the wing with *it* by the apex, in this position; then, etc." The pressing the wing gently down with pin D, is the only part of my plan for *which* I claim the merit of novelty, and very possibly I may err in asserting even thus much. Whether any comparison can justly be instituted between my method and the slovenly one of sticking a pin through the wings, I must leave to my readers. Lastly, Mr. Morris says I do not mention the method of setting with cotton thread, adding, "the effect (of this method) is better, and the process more quickly performed." I emphatically deny both these assertions. With regard to the *effect*, leaving the vexed question of curved or flat wings untouched, the system recommended by Mr. Morris utterly destroys the beauty of many insects, as the clear wings, *L. rubricollis*, *T. W-album*, and many other delicate species; the marks made by the threads being quite perceptible. With regard to *speed*, I will readily undertake to set twelve *Noctuæ* according to my method, in as short a time as can be done by any other. When I say this, of course I mean that both parties' insects are to be equally WELL set; not in that hasty careless way which necessitates the *re-setting* of five-sixths of the insects you obtain from your correspondents.—J. GREENE, 32, Lower Pembroke Street, Dublin.

C. dispar.—I must again request Mr. King to explain about *C. dispar*. His so-called explanation in "The Naturalist" for March, only makes confusion worse confounded. Mr. King puts himself into a worse position than ever, and into the bargain proves that Mr. E. Newman made a blunder in 1857, and a gentleman in Horning Fen told an astounding falsehood in 1856. In "The Naturalist" for January, Mr. K. advertises *C. dispar* for sale, together with a lot of other insects, and distinctly states that they were *all taken during the past season in the fens, etc.* In "The Naturalist" for March, he says the *C. dispar* were *not taken last year at all*, but many years ago, and on Whittlesea Mere, and not by himself, but by an old collector now dead. If Mr. K. can unravel this tangled skein, I hope he will.—H. HARPUR CREWE, Stowmarket, March 6th., 1858.

Review.

Histoire Naturelle des Insectes. Lépidoptères. Tome X. Uranides et Phalénites. Par M. A. GUENÉE.

THE second volume of this important work is now before us, and we are enabled to give our readers a brief abstract of the changes which it proposes in our list of British *Geometræ*.

The volume begins with the termination of the large family ACIDALIDÆ, the only remaining British species of which we find our old friend the "Blood-vein," which is now placed in the genus TIMANDRA, Dup., that of BRADYEPETES,

Steph., being sunk. The three species of *Timandra*, of Doubleday's Catalogue, are absorbed into the genus *ACIDALIA*. In the small family of *CABERIDÆ* the genus *CABERA* remains as in Doubleday, with the exception of *STRIGILLARIA*, which is removed to the genus *ASPILATES*. The generic name, *BAPTA*, Steph., is sunk, and that of *CORYCIA*, Dup., substituted; while *PICTARIA* remains as before, the sole representative of the genus *ALEUCIS*, Gn. The family *MACARIDÆ* is not altered.

In the family *FIDONIDÆ* we have, 1.—*STRENIA*, Dup. 2.—*PANAGRA*, containing *Petraria*. 3.—*NUMERIA*. 4.—*SCODIONA*, in which we have *Favilla-caria*, of Hub., under the name *Belgiaria*, Hub. 5.—*SELIDOSEMA*, containing *Plumaria*. 6.—*FIDONIA*, in which we find our old friend *Conspicuaria*. 7.—*MINOA*. 8.—*SCORIA*, containing *Dealbata*. 9.—*STERRHA*? 10.—*ASPILATES*.

Family *ZERENIDÆ*, 1.—*ABRAXAS*. 2.—*LIGDIA*, containing *Adustata*. 3.—*LOMASPILIS*, containing *Marginata*.

Family *LIGIDÆ*, 1.—*PACHYCNEMIA*. Family *HYBERNIDÆ*, 1.—*HYBERNIA*, which remains as in Doubleday's Catalogue. 2.—*ANISOPTERYX*.

The family *LARENTIDÆ* occupies nearly all the rest of the volume. The genera are 1.—*CHEIMATOBIA*. 2.—*OPORABIA*, in which *Autumnaria*, Doubleday, is made a variety of *Filigrammaria*. 3.—*LARENTIA*. 4.—*EMMELESIA*, in which the *Affinitata*, of Stephens, is constituted a distinct species from *Rivularia*, and *Bifasciata* a variety of *Unifasciata*. 5.—*EUPITHECIE*. 6.—*LOBOPHORA*, including *Acasis*. 7.—*THERA*. 8.—*YPSIPETES*. 9.—*MELANTHIA*. 10.—*MELANIPPE*, which now contains, in addition to those in Doubleday's Catalogue, *Procellata*, *Montanata*, *Galiata*, and *Fluctuata*; *Alchemillata* is constituted a variety of *Rivata*. 11.—*ANTICLEA*. 12.—*COREMIA*, in which *Unidentaria* becomes a variety of *Ferrugata*, and our old friend *Ligustraria* takes its Linnæan name of *Quadrifusciaria*. 13.—*CAMPTOGRAMMA*. 14.—*PHIBALAPTERYX*. 15.—*SCOTOSIA*, which now absorbs *Triphosa* and *Eucosmia*. 16.—*CIDARIA*, which includes the rest of *Phæsyte*, *Steganolophia*, and *Harpalyce*, not previously provided for, except *Chenopodiata*; *Inmanata*, Haw., is made a species of *Russata*, W. V.; *Ruptaria* returns to the name given it by Thunberg, namely, *Corylata*; *S. ribesaria* returns to the Linnæan name of *Prunata*; *Achatinata* to that of *Testata*, Lin.; and *Marmorata* to that of *Dotata*. The generic name *HARPALYCE* is altogether dropt. 17.—*PELARGA*, which includes *Chenopodiata*.

The family *EUBOLIDÆ* has genera 1.—*EUBOLIA*, to which is added *Palumbaria*, *Bipunctaria*, and *Lineolata*; *Multistrigaria* is placed in the genus *LARENTIA*. 2.—*ANAITIS*. 3.—*CHESIAS*. Family *SIONIDÆ* has only one genus, *TANAGRA*, containing *Charophyllata*.

It will be found by this abstract that considerable changes have been effected in the distribution of the *Geometræ*—some genera have been entirely swept away, and the species absorbed into others—many hitherto well-considered species have been constituted varieties merely of allied forms—and many names established by long custom, have been changed for those given to them by earlier systematists.

The object of M. Guenée is of course that of all good classifiers—that of obtaining as far as possible a natural arrangement; and we have to thank

him most sincerely for the able manner in which he has, in the furtherance of this object, abolished useless or ill-founded genera, extended families, and brought allied species more into contact with each other. How far he is correct in some of the cases in which he has sunk species into varieties, time and the *practical* experience of naturalists can alone show. Some of them have been already objected to. They will form good problems for our practical men to solve. It is by breeding the insect that the specific distinction is best established. We must not trust our "opinions" or our "convictions" upon this subject. We must first submit both to the rigid test of practical examination. We have, for instance, a doubt arising merely from our "opinion," whether *C. unidentaria* is a variety of *Ferrugata*. Guenée has made it a variety upon the slight testimony of a figure of *Sepp*, in which both insects are represented as raised from the same larva. *Unidentaria* was established as a species by Haworth, and has been sanctioned as such by all successive writers. It is only found in England, and therefore M. Guenée may not have had the opportunity of studying the species.

A still stronger case of doubt is, we think, that of making *C. autumnaria* a variety of *C. filigrammaria*, and this is another problem we leave our practical men to work out.

In the numerous changes of specific names, we feel inclined, in the strict performance of our duty, rather to find fault with M. Guenée. These changes create great confusion, without, we think, an equivalent scientific advantage. It is eight years since Doubleday's Catalogue appeared in this country, and almost all collections are named by it. This Catalogue, we believe, was formed on M. Guenée's own works, as far as the nomenclature was concerned. There was, we apprehend, as good reason then for calling *H. marmoraria*—*dotata*, and *H. achatinaria*—*testata*, as there is now. Even now the names of Stephens and Curtis, superseded by that Catalogue, are used by many. In eight years more we shall probably have another change, just when we are getting accustomed to know a thing by the name it is called.

We have not space, we are sorry to say, to enter further at present into a critical examination of these volumes. That they will give great satisfaction as a whole, we have no doubt, and that they will add to the already high fame of the author, and remain to future ages as a splendid monument of his zeal and industry, will, we are sure, be the willing testimony of all who examine their pages.—ED.

Miscellaneous Notices.

A Canine Fox.—A very extraordinary animal has been captured in this neighbourhood by the hounds in Alexton Wood, and is now alive, and in the possession of a surgeon in this town. When discovered, it was surrounded by the hounds, which made no attempt to seize it. It was lying crouched in a ditch, and appeared very thin and exhausted, and whether it had been pursued by the hounds, or had followed them, or had accidentally been discovered in the spot where they came to a fault, (for they

had had a run just before,) does not appear. I am inclined to think its discovery was purely accidental, as, whether a true Fox or not, had the hounds caught it after a chase, they would not surely have let it alone. At first it was very wild, and snapped at every one that came near, but by care and good feeding it has become quite tame, and will follow its master about the yard. I have well examined it with others, and we all are decided in our opinion as to its being a veritable cross between the Dog and Fox. The shape of the head and body is that of the latter animal, but the legs are long and clumsy, like those of a Dog, while the feet, again, and long claws, especially of the hinder pair, are those of a Fox. Its tail is a decided brush, even to the white tip. The ears and eyes are exactly those of a Fox, but the nose, though long and pointed, is not so slim and fine as is usually found in that animal, and partakes somewhat of the canine character. The general colour is foxey, except down the front of the breast and on the fore legs, which are white, as are also the hind feet. The hair is like that of a Fox, especially about the head and back, and the whole animal, which is a full-grown female, distinctly combines the characteristic features of the two species; and, what is most remarkable, from the appearance of the teats, it seems to have lately suckled young itself. No doubt it was brought up in the woods, and its dam was a Fox, for, had it been the offspring of a female Dog, it would never have been allowed to run wild, or been discovered in the state in which it was found.—F. M. BURTON, Uppingham, December 2nd., 1857.

Occurrence of the Otter at Fakenham.—A fine male Otter, weighing twenty-four pounds, was killed near Fakenham, about the middle of January last.—T. SOUTHWELL, Hempton, Fakenham, February 9th., 1858.

A Black Hare.—I had to preserve a beautiful specimen of a Black Hare captured at Merton, the seat of the Right Hon. Lord Walsingham, near Thetford, on December 23rd., 1857.—H. REYNOLDS, Thetford, Norfolk.

Mildness of the Season.—Your note in the last number of the Naturalist respecting the mildness of the early winter in Yorkshire, has induced me to send the following notice to shew the extreme degree of mildness of this mid-winter season in Cornwall. On New Year's Day, I gathered from a garden in Looe, the following flowers:—Nasturtions, two varieties of Roses, Siberian Primroses, Sweet Violets, Venus' Looking-glass, whilst I saw in another garden fine varieties of Fuchsia, Heliotrope, Campanula, Scarlet Geraniums, Scarlet Salvia, Periwinkle, Roses, Mignonette, Ten-weeks' Stock, Pyrus Japonica, all in full bloom, growing without the least protection from the weather, shewing a greater degree of mildness than has ever before been remembered at this season. I also saw during a country ride to-day the following flowers:—Rough Robin in great abundance in every hedge-row, a

field one mass of golden yellow from the abundance of Charlock in bloom, many specimens of Hawkweed, Violets, Daisies, Dandelions, Wild Strawberries, and a flower, the name of which I do not recollect. Should the present mild weather continue a short time longer, we shall have the spring flowers making their appearance before the flowers of last summer have left us—an occurrence, I believe, never before remembered.—STEPHEN CLOGG, Looe, January 2nd., 1858.

A statement has appeared in some of the north-country papers, to the effect that the notes of the Cuckoo were heard in a field near the village of Cleadon, in the county of Durham, on Thursday last, the 11th. February. As this is a remarkable circumstance, and appears to be authentic, I desire to bring it to your notice. Perhaps some of your correspondents may be aware of the early appearance of this migratory bird in former years. If so, I should be glad to be informed *when* and *where*, and whether it was followed by an *early* and *warm* summer. Gilbert White's and Hardwick's calendars both return a later date for the appearance of this bird in the south of England. I may add that the past winter has been a mild and dry one, and at the present time, on a bright afternoon, the trout may be seen to rise at the natural fly in the River Derwent—a further proof of the mildness of the season.—R. BARRINGTON COOKE, Scarborough, February 16th., 1858.

[Mr. Cooke will see other similar instances, *re* the Cuckoo, in my account of this species in my "British Birds." *Re* the trout, I saw one rising last week. It is a regular thing all the winter through in suitable weather.—F. O. M.]

On the last day of the Old Year the Yellow Jasmine was in blossom in the Rectory garden at Sutton-upon-Derwent, near York; and walking home from there, over Allerthorpe Common, the Gorse was in bloom, all the way more or less, for a mile or two—that beautiful blossom which, it is said, Linnæus, on first seeing in this country, fell down on his knees and thanked God for the sight of.—F. O. MORRIS, Nunburnholme Rectory, March 4th., 1858.

Eggs of the Nuthatch.—In the last December number of this journal, in an account of the habits, etc. of the Nuthatch, the eggs are described as being "like the Wryneck's, white," which I think must be an error, as all that I have obtained, agree with the description by Yarrell, vol. ii., page 176, which is, "the eggs are very much like those of the Great Tit, but the spots are generally less numerous and rather larger." But, although the eggs of these two species are similar, there is a marked difference between them when compared together. Possibly by some means the eggs

of the Lesser Spotted Woodpecker may have been described, which are white and very like those of the Wryneck, instead of those of the Nuthatch.—JOHN PORTER, JUN., No 8, East Street, Lewes.

Occurrence of the Alpine Accentor, near Lewes.—On the 26th. of December last, I obtained two specimens of the above rarity, which were shot on the Downs near here.—Idem.

The Water-rail.—Whilst out hunting on Saturday the 12th., I saw the following:—The hounds in trying a thick thorn cover at Walkeringham, in Nottinghamshire, disturbed a Water-rail. It flew a considerable distance, and settled on a thorn by the side of the cover. It suffered a farmer, who was out on horseback, to ride up and cut it down with his whip. It was a fine specimen, but lighter on the back than those I have usually seen.—C. ANDERSON, Lea, near Gainsbro', February 13th., 1858.

A Colony of Sand Martins in a Town.—Although we cannot see the process of incubation, yet there is no lovelier sight in the nidification of our British birds than that of a colony of Sand Martins, whether we consider the confidence which this bird reposes in man, its perilous voyaging, (demandant pardon, Baron Humboldt, etc.,) its evident utility in the economy of Nature, its butterfly-like flight and low twitterings, which, like other aerial songsters, are mute on the ground, as if, as the falconer in Walton's Angler has it, it were "sad to think it must descend to the dull earth, which it would not touch but from necessity." Not the least interesting of these points in its history is the freedom with which it sometimes builds in the vicinity of dwellings, and even busy streets. One of the most remarkable instances of this occurred last summer in this town. In the softer sandstone overlying the rock, laid bare by a cutting in the west end of the town, there have been more than a hundred nests, and, to judge from the numbers of birds haunting the spot, perhaps little short of six hundred Sand Martins were reared in them. This colony is surrounded by paved streets, and a nunnery and a large chapel are in immediate contiguity. There is no water near. From this interesting occurrence it appears that this bird is not of that solitary habit that some have supposed, but that, provided the situation be favourable, it matters nothing whether the nest be "remote from towns" or "in populous city pent." I should observe that many of the holes have been filled up and obliterated by the action of the weather.—HENRY PAYNE, M.D., Nottingham, October 26th., 1857.

The Rev. F. O. Morris will be very much obliged to any of his readers who will send him, this spring, some larvæ or chrysalides of *Atalanta*, *Cardui*, *Fimbria*, *Polychloros*, *Monacha*, and, if possible, *Pieris crategi*; the two last-named to introduce into his neighbourhood.—March 2nd., 1858.

Proceedings of Societies.

Thirsk Natural History Society.—The monthly meeting of this Society was held on the evening of Monday, the 1st. of February. The following Botanists were duly enrolled as members of the Exchange Club:—B. Carrington, M.D., Yeadon, Leeds; T. W. Gissing, Wakefield; W. L. Lindsay, M.D., Perth.

Mr. J. G. Baker read a paper on the British species of *Delphinium*, in which he referred to *D. Ajacis*, the plant figured in English Botany as *Consolida*, and stated that he was not acquainted with the true *Consolida* as a British plant. He also announced the discovery in the Carnarvonshire Highlands, by one of the Snowdon guides, of *Dryas octopetala*, a plant previously known in Britain only in Scotland and Yorkshire.

Mr. J. H. Davies read a paper from Dr. Carrington, of Yeadon, enumerating five mosses new to the Isle of Man, and announced the discovery, by Mr. Marratt, of a supposed new species of *Bryum*, (*B. cochlearifolium*, Wils. MSS.) in the neighbourhood of Liverpool; by Mr. Nowell, of *Lepidotodon Smithii*, in Borrowdale; and by Mr. Croall, of *Andreæa grimsulana*, on Ben-na-macdhui.

The Querist.

Does the Tortoise produce eggs in this country?—Early in November a bird-stuffer in Fakenham, had a Tortoise brought to him which had died in confinement. Upon removing the body in order to clean the shell, he found it to contain a number of eggs, some of which were in a very advanced state; the shell of one which I have appears quite perfect, and must have been fit for exclusion. I was not aware that the Tortoise ever produced eggs in this country, and shall be glad if any of your readers, who are better acquainted with its history than myself, will inform me whether this is an unusual circumstance—to be attributed, perhaps, to the long, hot, and dry summer, or whether such instances often occur.—T. SOUTHWELL, Hempton, Fakenham, Norfolk, January 2nd., 1858.

[Can Mr. Southwell state whether the Tortoise had been for a long or a short time in this country, and whether it had been “solus,” or rather “sola,” or not?—F. O. M.]

Can any of our entomological readers tell me the money value of *Cassiope*, *Blandina*, *Artaxerxes*, *Arion*, *Bembeciformis*, and *Fuciformis*?—F. O. MORRIS.

THE GAIT OF BIRDS.

BY O. S. ROUND, ESQ.

HAVING considered in former papers the sounds which birds are capable of uttering, the food upon which the several kinds subsist, and their mode of locomotion in the air, that medium for which, with only a very few exceptions, they are peculiarly fitted by Nature, I shall now proceed to discuss a faculty for which they are not so peculiar, but which they possess in common with all animals, namely, locomotion upon the earth's surface. Man has a foot most exquisitely adapted for the preservation of his erect position, notwithstanding any inequality of surface; and in a wild or savage condition, his powers of leaping, running, or climbing, or of endurance in all these, is little inferior to that of the majority of animals, having regard to his bulk, and the formation of his limbs; hence his general qualifications are not so remarkably developed as that of other creatures, to which a particular mode of life is assigned, and which are proportionably endowed for that one, and awkward when endeavouring to exercise any other, for he can excel to a certain degree in all.

Birds more resemble animals in this particular, for, whilst the greater number are perchers, and peculiarly fitted for living in trees, sitting on the twigs or branches; others are formed for swimming, others for wading, which are partial swimmers; and others, which are by far the smallest number, for exclusive movement upon the earth itself. Three of these divisions are very familiar to us all; thus we all know the Sparrow or the Redbreast, which are perchers, (although the latter has more of a running leg too;) we are equally familiar with barn-door fowls or the Lark tribe, which are walkers or runners, (the latter, however, being scarcely runners,) and have seen the common Goose or tame Duck perform the action of swimming; but the waders, of which the Common Snipe is an example, are not so well known, being wild birds, and seldom or never the subjects of domestication.

Among the first division of perchers are included all the Finches, the Creepers, the Thrush kind, and all the birds of prey, although, strangely enough, some of these build on the ground. The greater proportion of the insectivorous birds are also perchers, indeed they all perch without exception; but there are a few which have the faculty of walking or running, which is possessed by none of the others, for these others, when on an even surface, hop and do not move one leg before the other; thus the Wagtails walk and run, and are the smallest birds that do so. The granivorous or seed-eating division are also capable of perching, and are pure perchers, with the exception of the *Gallinule*, which order includes the domestic fowl and birds of game, (except the Wood Grouse,) and the

Larks, which all walk; then in the marsh birds, which are partially aquatic only in their habits, there are the Peewit and Land-rail, which are good runners; then the Bustards, which are now confined, however, within a very narrow limit, and these are so fleet as nearly to distance a horse, and were anciently chased with dogs. Our Stone Curlew, (*Charadrius Edicnemus*), and the foreign Ostriches are instances of the same speed of foot, and the Woodcock and Quail more moderate in their powers, but still able to run and walk. I have merely specified the birds of game as instances, but there are among them some which are unrivalled in speed of foot for their size; I more particularly refer to the Partridge, but the Peacock, Turkey, and Guinea-fowl are likewise endowed with this faculty.

Of the birds of prey, all are, indiscriminately, perchers, and almost incapable, from the formation of their feet, which are the chief instruments by which they take their prey, of moving on a flat surface. The Willow Wrens, the Titmice, the Woodpecker tribe, and all our summer visitants, are also perchers; but then the Pigeon tribe, although they cannot run, walk very respectably; even among the pure perchers there are great modifications; thus, the Swallow tribe, although they cannot move to any extent on the ground, are also incapable of performing any evolutions of activity on trees or buildings; this is also the case with a great many of the perchers, among which we may include Hawks and Owls, the Cuckoo, the Chats, and the Common Bunting; and although the Thrush and Pie kind are remarkably active among the branches of trees, the Starlings seldom stir from one position; and the Raven, Rook, Crow, and Jackdaw are much more fond of quiescence when perching than of hopping from bough to bough. These, however, all walk, though they cannot run. The Creepers have feet which are a sort of compromise between the walking and clutching formation, and move on the face of the bark of trees with extraordinary facility. Some, as the Nuthatch, move in all positions, up and down, but he takes a wider range, being also a percher, but the rest of his order never perch.

Now, among the water-birds, by far the greater number are runners, for all the waders are runners also; and as their mode of life is much more uniform than the land-birds, so when we come to consider their habits in the mass, we always find the matter very much simplified. Thus it may be stated broadly that all the waders which are of the Snipe or of the Gallinule genus are walkers and runners, some very good, others with a web on the foot partially developed, are greater adepts at swimming and diving. The former, which are shore or marsh birds, are perhaps the best examples, for the Common Gallinule, or Moorhen, is indeed a bad example, for, like many of the same kind, his toes are too long to render him a good pedestrian in proportion as they assist him in his natural element.

All the Duck tribe are almost incapable of running; some indeed, such as the longer-legged ones, waddle along with considerable dispatch; but this movement is so ungraceful and forced, as hardly to deserve the name. There are some of these, such as the Coot or Grebe genus, which have the legs placed so far behind, as to be almost purely aquatic, which hardly walk at all from mere inability to escape if caught upon a plain. These have not their feet entirely webbed, but palmated, that is, with circular flaps of skin attached to the sides of their toes, and little or no hind toe; this is however the case with the Stone Curlew and Peewit. There is also a sort of link between the Duck tribe and the waders, which have the webbed foot of the former, but the long leg and the same form in body as the latter; thus the Dotterels and the Turnstones are web-footed but active birds, and connect both characters. The water-birds contain some perchers, for all the aquatic Falcons and Eagles are of course endowed with powerful talons; the Crane and Stork are also water-birds, and the Heron tribe are always classed among them: these two orders are very powerful runners, being of a high lean figure, with very long legs.

There is a very large family of marine birds which are included under the name of Gulls; these are almost as numerous as the Snipe genus, and are as distinctly marked in their appearance; all these are light birds, and run tolerably well, as do those which bear a modified resemblance to them, as the Avocet, the Spoonbill, the Olive or Oyster-catcher, the Terns, and the Petrels.

Now the Divers I consider as possessing much more alertness than the Duck tribe in general; they are of a sharper shape, and formed entirely for aquatic evolutions, cutting a very poor figure on shore. The feet of these birds are most beautifully adapted for expedition in the water, being so constructed as to present the largest possible surface to the water in the stroke, and the least in drawing it back to take another: this arrangement of folding up I shall probably descant upon more particularly hereafter. The Gannet is a bird which very much resembles the Divers, but he is a very much better walker, although he cannot run. The Cormorants and Darters are still further removed from the Duck tribe in appearance, and yet still retain the webbed foot and plumage capable of resisting the water: these are all indifferent walkers. The Darters are, I suppose, the most expert swimmers and divers of all birds.

The climbing birds have some analogous species, which, although they cannot run or make any dispatch on the bodies of trees, yet have a habit of clinging to the smaller twigs or branches whilst feeding; these are all perchers, and include the Titmice and the Aberdevine. The Crossbills also use their bills in aid of their feet, in holding their food; in this they resemble the Parrots, as in many other particulars. It is a curious fact

that the Creepers, although they seldom use their wings, if those members (the wings) suffer damage, will not adhere to the body of a tree if placed upon it, although when so young as to be unable to fly, they constantly leave the nest, and crawl all over the body and limbs of the tree in its neighbourhood.

There is yet one other class of birds which I shall advert to, and this is the Auks and Penguins, which can scarcely be said to have any powers of locomotion whatsoever. If it were not for the conviction which every man who is a believer in the Omnipotent Wisdom of the Creator must possess of the admirable fitness of every class of beings, for their appointed mode of life, these creatures must become objects of our pity, so helpless do they appear; but the truth is, they are only fitted for one element, although perfectly so as to be birds to all intents and purposes; they can neither move on the land, nor traverse the regions of air, for they have mere rudiments of wings, and their legs being extremely short, and placed quite close to the tail, causing them to sit up in an erect position; this total helplessness can however only be applied to the Great Auk and one other bird, the Dabchick or Little Grebe, which however can, like the ear-wig, make a shift to fly, under extreme circumstances, and which is very well known to frequent almost every piece of water of any extent. The other Auks can manage to fly a little, and something in the manner of the Coot and Moorhen. There is one kind indeed, the Shearwater, which flies very well, and also runs as well as any of the Gulls; but the others, including the Puffins, are miserable hands at terrestrial movement.

(To be continued.)

ON UNITY OF SYSTEM.

(Continued from page 77.)

THE life of every natural creature proceeds from and returns to one source, the individuality being only temporary, except in man, who is responsible. The spirit of life thus being never separate from its source, and consequently never partial or imperfect, but only apparently modified by the agent which it developes, may be supposed to represent in each creature the law which governs the whole visible world, and, accordingly, that every kind of creature is expressive of the system of all the earth, and that this expression or image is not more complete or perfect in one kind than in another, but that each kind has its peculiar perfection, and that what is developed in one class of creatures is degraded in another, what is hidden in one is manifest in another. This system appears also in combinations as well as in individual creatures; each region in some degree represents the whole earth; the chronological epochs are the counterparts

of the geographical regions; the course of a year is expressive of the extent of the earth, and each day is expressive of the year. All this is effected by the law of divergence, which will be now explained.

It is well known that there is no apparent difference between the kinds of living creatures at the beginning of their existence, and that the great divisions of beings up to man, are successively manifest during the growth, beginning with the distinction between the animal and the vegetable kingdoms, and continuing through the successive divisions of the animal kingdom to that of species. It is obvious that if matter were merely to be raised from its lowest state to its highest degree of organization, man would be the only kind of creature on earth; but this law of development acts by means of divergences, and the way by which the law of divergence is controlled may be termed the law of degradation. In other words all the developments are divergences, and no kind of creature, from the lowest up to man, makes any real progress in its development, or advances at all towards the creatures which are above it in degree, but, on the contrary, diverges from them. And man also, as will appear in the sequel, makes no real progress towards a higher state by the development of his faculties, and by the progress of civilization, and of the arts of life.

Beginning with the mineral kingdom, which is the foundation of all plants, of animals, it is found to have a development which is termed crystallization, and which has a peculiar perfection and exact regularity of structure, exceeding all of the like kind in the vegetable and in the animal kingdoms. This perfection may be termed the divergence of the mineral kingdom, being, so to speak, figurative of, or representing the divergence of each higher degree of creation, and ceasing when the mineral substance is transferred to, and assimilated with vegetation, its crystallized state being wholly unfit for that effect, like as the development or divergence of each living creature precludes its progress to a higher degree, and diminishes its affinity to the kind which it most resembles. It thus appears that if the law of divergence were the only law, there would be no connection between the creatures which are its manifestations or illustrations, except in their common origin, and in their mutual difference not being apparent at the commencement of their existence, but that they would radiate, as it were, from one surface. But the divergences are ordained to be limited, not only in extent, but in number; and each epoch of animals has its peculiar combination of species, and the same species, generally speaking, never occur twice, or in two different epochs, and the creatures of each epoch must mostly or wholly cease before those of a new one are developed. Man alone, (with, in some slight degree, a few creatures who are associated with him,) comprises a succession of epochs,

which, like those of animals, are all different, and the substance of each earlier one is transferred to the succeeding one.

(*To be continued.*)

THE NATURAL HISTORY OF SUNNINGHILL.

BY O. S. ROUND, ESQ.

CHAPTER I.—INTRODUCTORY.

AN historical notice, a learned dissertation upon antiquities, or a drier topography, is not that which will be found in the following pages; no, I enter upon an easier and more pleasing task, to myself at least, and trust that it may prove equally so to my readers. The district I am about to describe is not the place of my birth, but of my adoption, for it was to this spot that I was brought when labouring under the sickening influence of the unwholesome vapours of the metropolis; here it was that I drew first an unpolluted breath of the free air of Heaven, to which salubrious change I probably owe my present being: it cannot, therefore, be surprising that I should undertake the task of celebrating its beauties, or that such task should contain for me a certain degree of pleasure. I have entered upon it with the more confidence since I am but an atom of the mass of its admirers, for it may be safely affirmed that no one once visited it for a summer without (if in their power) doing so again.

Having resided on the confines of the parish for upwards of twenty-five years, my knowledge of its general features is consequently considerable; these I shall endeavour to set forth in the clearest light, and as I am neither a scientific naturalist or geologist, I must be understood to speak in popular phraseology, and to state things exactly as they are, without ornament or addition. It is impossible but that in the course of so many seasons, a cloud should have occasionally passed over the prospect, but then, although they must cause particular localities, as we gaze upon them, to revive, melancholy recollections lend a superior interest to the scene, as lively and far deeper than the brightest reminiscences of days gone by, for here gloom is present, there departed and softened, and mellowed by the hand of time.

The admiration of a rural landscape must be the natural bent of the mind, for although the conveniences of a town life in some measure supplant it, with what double gratification do we return to it and inhale its sweet breath; and whilst we revel in the pleasures of artificial life, as a relaxation from daily toil, pursue that toil merely for the pleasure of retiring into the country in our latter days. Horace has this idea in his first satire, where he says—

“Ut in otia tuta recedant.”

It is the general end of all labours carried on in the town, and I question whether you could find one man thus locally employed for his living and profit, who does not look forward to such a reward at the conclusion. Many who can afford it keep both a town and country residence, and amongst us lawyers the saying is almost proverbial, that what we gain in fee legal we lay out in fee simple; and simple enough some of our *bar-gains* are, for want of agricultural knowledge, and no lack of designing venders of the commodity. Still to live an easy country life in one's latter days is a delightful reflection, one to which the mind naturally turns as a solace in time of toil; nor can any one who has enjoyed it rationally, say that it has fallen short of his expectations, for, where there is a thing really to be enjoyed, if we are denied the pleasure, surely we must refer the defect to ourselves. It is here that so many who make it their last sojourn fail; for, mistaking the definition of ease they become totally idle, which two words are as different in their meaning as bodily suffering and fanciful annoyance. Because we are no longer forced to labour for our subsistence, it is surely no reason why we should be inactive, and lead, thenceforward, useless lives, when there are so many things leading to beneficial results, and which are mere pleasurable pastimes. Nay, the greatest possible happiness a man can experience is constant employment, which, without absolute fatigue, never allows listlessness to become his companion. Even a certain degree of actual fatigue is necessary to enjoy life thoroughly, for if we do not induce it we never can know what recreation is.

There are many, who, enjoying all the luxuries of the table, are totally ignorant as to the manner of their production. If they knew the toil, the variety of process, and the distance which procured them, would it not cost a greater interest in the several qualities of each item, and tend to dispel in a great measure the fastidiousness and epicurism which so often prevails; if so, is not the cultivation of the soil a very delightful source of useful pleasure? To trace the seed first deposited in the earth by the hand of the sower, and buried by the harrow which follows on his steps, to see it sprout through its superincumbent earth, and clothe the fields with verdure, until, rising to full growth, it becomes whitened by the scorching beams of the summer's sun, cut by the reaper, borne by the wagon to the barn, the grain separated from the stalk by the thrasher, ground by the miller, and formed into bread by the baker; and all this process is gone through by every morsel of bread we eat. Look next at Horticulture and the rearing of flowers, so charming by its ornament and perfume, and, after this, the study of nature generally; the birds, the animals, the insects, the reptiles, even the inanimate vegetable world spreads out for us a table, a feast of knowledge, in the wilderness;

and even the blue vault of heaven itself displays its silver orbs, purer, brighter in the wild than in the city. There is nothing above or around that will not repay us a thousand times for our attention!

But my readers will say, "what is all this to Sunninghill?" I answer much, for it was this which led me to study its features, and to find an inexhaustible fund of pleasure, which never fadeth amid its sweet scenes. Without this it had possessed little interest for me, and I would lead those, who as yet know not this pleasure, to study their own native regions, and whether they give their thus acquired knowledge to the world or not, not to leave that which they can have "without money and without price" unsought.

(To be continued.)

Entomology.

LIST OF LEPIDOPTERA OCCURRING IN THE COUNTY OF SUFFOLK.

BY THE REV. JOSEPH GREENE, M.A., ASSISTED BY THE REV. H. HARPUR CREWE, M.A.,
AND C. R. BREE, ESQ.

[The portions of these papers contributed by Mr. Crewe and Mr. Bree, are signed with the initials C and B respectively. N.B. at the head of a paragraph signifies that the remarks are made after those of Mr. Greene.]

(Continued from page 87.)

58. *N. camelina*.—Common.

N.B.—The larva of this insect may always be distinguished from its congeners by the two red tubercles on the eleventh segment. A beautiful rose-coloured variety is not unfrequently found, which an inexperienced collector would at once pronounce to be the larva of a different species. I have however kept these larvæ separate, and there is not the slightest difference in the perfect insect. M. Duponchel remarks that this variety only occurs in the autumn brood. The larva is polyphagous. I have, I think, taken it upon all our British forest trees, except the ash, yew, fir, holly, and the horse and sweet chesnut. In confinement I can most positively assert that it is double-brooded; the perfect insect appearing in May and June, and again in August. Whenever I have kept the eggs found in May, the larvæ have produced the perfect insect in August. My worthy correspondent, Mr. Harding, of Stapleton, states that out of a brood of twenty-five larvæ, hatched this last spring, every single pupa emerged in August. I have not the shadow of a doubt that the same result occurs in a state of nature to all or part of the spring brood, and that the eggs laid by these August moths, produce larvæ full-fed in September, October, and November, which pass the winter in the pupa state. I took but little care of my larvæ, often half-starved them, and kept them in a room

with the windows constantly open, so that confinement was, if anything, calculated to retard rather than accelerate maturity. I have moreover beaten the larva full-fed in July, but being stung I did not rear it. What is still more conclusive, I am again firmly supported in my opinion by M. Duponchel and Guenée, who remark of this larva, "The individuals found in July produce the perfect insect in August. Those found in October pass the winter in the pupa state."—"Les individus qu'on trouve en Juillet deviennent insectes parfaits en Août. Ceux qu'on trouve en Octobre passent l'hiver en chrysalide, et ne donnent leurs papillons qu'en Mai ou Juin de l'année suivante. (C.)

59.—*N. cucullina*.—I have been assured that this insect has been taken in Suffolk, but I did not meet with it.

N.B.—I have much pleasure in adding this insect to the list of Suffolk lepidoptera. I beat two larvæ last August a few miles from this place, and Mr. W. Baker has, during the last few years, taken six or seven of the perfect insect in the same locality. It appears, however, to be very rare. I had also, I believe, the pleasure in the summer of 1853, of re-discovering this insect in Bucks., after its non-occurrence in England for several years. I was casually examining some maple twigs in July, when I found eggs which from their appearance I felt convinced were not those of *N. camelina*, the only other British *Notodont* which feeds on maple. I took about ten of them home into Derbyshire, and reared five larvæ, which when full-fed proved to be indubitable *Cucullina*. My friend Mr. Greene, who was at that time residing in Bucks., ran me very hard in my discovery, for upon writing to inform him of my grand haul, he replied that a few days previous to the arrival of my letter, he had himself beaten the larva. I had beaten two small larvæ the previous year, but not knowing what they were, or what I had beaten them from, I killed them by giving them beech leaves. It appears to feed exclusively on maple, and what is still more remarkable, it prefers the most shady spots, and may generally be found in the greatest plenty where the sun can seldom penetrate. I only once beat two larvæ from a sunny hedge, and they were both of them beautifully suffused with red, like the rose-coloured variety of *N. camelina*. It is very uncertain in its appearance; one season the larvæ are tolerably plentiful, whilst the next scarcely one is to be seen. It may always be distinguished from its congeners, by the glass-green dorsal stripe which extends from the head nearly midway along the back. It is a very easy insect to rear. It spins a cocoon similar to that of *N. camelina* and *dromedarius*, among moss or roots of grass, etc., just at the surface of the soil. It has never, I believe, been found in the pupa state in England. The egg, which is laid in July, and placed on the under side of the leaf, is of a very delicate semi-transparent white, and easily distinguished from those of *N. camelina* and *dromedarius*. The perfect insect appears in June, and the larvæ may be found from August to October, of various sizes. It is only single-brooded. I have reared the larvæ from eggs laid in confinement in May. They spun up the end of June and the beginning of July, but not a single moth appeared till the following May. If my readers wish for further information, I must refer them to my papers on the double-broodedness of some of the *Notodontæ*, at pages 4592, 5148, and 5292, of the "Zoologist"

for 1856. I have twice succeeded in getting this insect to pair in confinement, but it is very seldom that it will do so. I have not been able to visit its favourite locality for the last two years. (C.)

60. *N. carmelita*.—One larva, which however unhappily died. It is curious that, though generally very successful in finding the pupæ of this genus, I never succeeded in meeting with one of this species.

61. *N. Dictæoides*.—Very scarce. A few beaten larvæ from birch, but none bred. It has been asserted that the larva of this species sometimes feeds on poplar, and that of *Dictæa* occasionally on birch. Here I have no hesitation in speaking *positively*. I do not believe that *Dictæa* was *ever* taken off birch, or *Dictæoides* off poplar. It is just possible that they may be *made* to feed on those trees, though I strongly doubt it. It is well known that the larva of *Dictæa* is often of a reddish brown colour, and that it constantly assumes that appearance just before becoming a pupa. Should then the tyro find one of these dark-coloured specimens, he might easily mistake it, as I myself once did, for *Dictæoides*, and say that he had taken it off *poplar*. It is very probable also, that he would not be undeceived even by breeding it, the two species being so very similar in the perfect state. This seems to me a simple and satisfactory explanation of what I have no doubt is an error. It is well deserving of notice, that these two insects generally emerge from the pupa very late at night, or early in the morning, and unless the collector be at hand, they will inevitably spoil themselves, as they begin to fly almost immediately after the wings become strong, and frantically batter themselves against the sides of the cage.

N. B.—The larva of this insect, as far as my experience goes, feeds exclusively upon birch. M. Duponchel mentions alder as a food-plant. This may be the case sometimes, but in Derbyshire, where this larva is in some seasons not very uncommon, and where birch and alder grow freely intermixed, I never beat a single larva off the latter tree. The following description was taken from a full-fed larva in 1856:—"Length, about two inches; back, deep purplish brown, darker in the middle—very glossy. On each side a broad yellow stripe containing the spiracles, which are black with a white marginal ring; on the anal segment a rugose horse-shoe plate. Head, minutely spotted with white, and having two dark parallel lines running down the centre; immediately behind the head a pale bluish transverse bar, succeeded by a black one. Belly, greenish yellow, with a broad purple stripe on either side; anal segment and dorsal protuberance studded with a few scattered hairs. Hubner, Westwood, and Rennie, have figured and described the larvæ of *Dictæa* by mistake for this species. I have taken the larva full fed in July, and again in September and October. The perfect insect I have taken twice, once at rest on the bole of a birch, just emerged from the pupa, at about three o'clock, p.m., May 11th; and the other in July, by placing a light at my bed-room window. It appears to be double-brooded; I have not yet been able to try the experiment, but M. Duponchel remarks:—"It (the larva) is found at the same time as that of *Dictæa*, that is to say in June and September; it perfects its transformation in the same manner."—"Se trouve aux mêmes époques que celle de la *Dictæa*, c'est à dire en Juin et Septembre;

elle se métamorphose aussi de la même manière." The egg is laid at the back of the leaf, and is scarcely distinguishable from that of *Dictæa*. (C.)

62. *N. Ziczac*.—Not common, though I occasionally met with the eggs and larvæ both at Brandeston and Playford, on poplar and willow.

N. B.—M. Duponchel says of this insect, "This species has two broods in the year; the larvæ which we find in June, are the produce of moths bred in April and May, and which have passed the winter in the pupa state; those which appear from September to the end of October, proceed from moths bred at the end of the summer."—"Cette espèce a deux générations par an, les chenilles que l'on trouve en Juin proviennent de papillons éclos en Avril ou en Mai, et qui ont passé l'hiver en chrysalide; celles qui paraissent depuis Septembre jusqu'à la fin d'Octobre, proviennent de papillons éclos dans le courant de l'été." It is also double-brooded in this country, that is, the eggs laid in May produce moths in July or August, and the produce of this second brood become full-fed in the autumn, and pass the winter in the pupa state. This occurs both in confinement and out of doors. I had a brood of *N. ziczac* in May, 1854, from eggs laid by a bred female. They spun up the end of June. About the 18th. of July the first moth appeared, and in a short time every pupa had emerged. I immediately decided *N. ziczac* was double-brooded, but was met by the objection that it was confinement which had caused this rapid maturity. This last spring, 1857, Mr. Gascoyne, of Newark, had about seventy pupæ of *N. ziczac*, these all produced moths in May, and whenever they had a chance they paired. The produce of this brood, which were kept out of doors, and on growing plants, were full-fed and spun up in July. They all produced moths in that month and August. This brood also always paired when allowed to do so, and laid fertile eggs. Mr. E. Shepherd "distinctly denies" that *N. ziczac* is double-brooded. I leave the readers of "The Naturalist" to form their own conclusion. The egg of this insect has a sort of bluish tinge, which distinguishes it from the rest of the *Notodontæ*; it is laid on the under side of the leaf. The larva feeds indiscriminately on the various species of poplar, willow, and willow, and is exceedingly variable in colour. I may add that whenever I have found eggs or larvæ of this insect in June or July, the perfect insect has almost invariably appeared in August. (C.)

(To be continued.)

ARE THE NOTODONTIDÆ DOUBLE-BROODED?

BY THE REV. J. GREENE.

I HAVE read with much interest the remarks of my friend Mr. Crewe, upon the double-broodedness of some of the *Notodontidæ*, and I freely confess that he makes out a strong case. Still his answer to my main, I may say my *only* objection, is not satisfactory. My objection was and is, that of the pupa dug up even as early as the beginning of August, there is no instance on record of the perfect insect appearing from them

in the same year, which circumstance, if true, strongly militates, as it appears to me, against the theory of the insects being double-brooded. The objection applies with greater force to *Camelina* than to *Dictæa*, for I have frequently turned up the former the first week in August, the latter only occasionally; but in neither case has the perfect insect ever appeared before the following spring.

Mr. Crewe suggests two answers to my objection. The cause of my failing even to *force* them, he considers to be obvious; "because they were not the produce of eggs laid in May, but at the end of June or in July, and were not intended to appear till the following spring." Now this appears to me to *assume* the whole point at issue between us. I see no reason whatever why the pupæ found at the beginning of August, should *not* be the produce of eggs laid in May, or at the beginning of June. On the contrary, it seems to me, that they unquestionably *are* the produce of those eggs, and of none other. I confess I do not understand Mr. Crewe's argument here. His eggs laid in May, produced the perfect insect in August. Very well. Those eggs were, of course, *laid* by the parent which had passed the winter in the pupa state. The eggs were laid, and the parent dies. *What then lays those eggs in June and July, the produce of which is not intended to appear till next year?* If my friend Mr. Crewe, can answer this question, it is more than I can. But to state the case a little more particularly. I find a fertile ♀ *Dictæa* at the end of May; she lays her eggs, which hatch about the second week in June; by the end of July, or beginning of August, they are full fed, and go down. I dig up half a dozen pupæ, and try to force them; but they will *not* be forced. And why? Because, according to Mr. Crewe, they were *not* the produce of the eggs laid in May, but of those laid in the end of June and July. I ask again, what laid these latter? *Supposing* this question satisfactorily answered, I would ask, is it possible that an egg of *Dictæa*, laid on the first of July, could hatch, feed up, and turn to a pupa, by the first week in August? I pause for a reply.

As to Mr. Crewe's second answer, namely, M. Duponchel's statement, that the spring brood spin up between two leaves, while the autumnal brood burrow into the earth. I place little or no value upon it, that is, the statement. I appeal with confidence to Mr. Crewe, and to every English entomologist, whether they ever knew such a circumstance to occur, as that of *Dictæa* spinning up between two leaves! But, granting it to have occurred once or twice, it lies with Mr. Crewe, and Messrs. Naish, Harding, and Gascoyne, to assert that it is the *custom* for the spring brood to do so, if they would build anything upon M. Duponchel's statement. That they will *not* assert this, I am confident.

To sum up:—I cannot give my assent to the statement, that either

Camelina or *Dictæa* is naturally double-brooded, until one or more of the pupæ of those species dug up in a normal state, produce the perfect insect the same year. I dig at poplars, oaks, elms, etc., all the year round, but I never found a pupa of either between the first week in June and the last week in July.

Marston Montgomery, Ashbourne, Derbyshire.

Ceropacha flavicornis.—I find there is a great discrepancy in the appearance of the larva of *C. flavicornis*. Stainton, in "Manual," says it is found in September; the Rev. Mr. Greene informs us it is taken in June. Now at what period does the moth appear?—with us in the very early spring. From March 20th. to April 9th., I took fifteen specimens; did not see one after this date. The larva I have not yet taken, but have no doubt that it is full-fed at the end of May and beginning of June. In Scotland, perhaps, the insect comes out later, then the larva will be found late also. If you could give your dates as well as all those making district lists, some approximation to the truth would necessarily ensue, and we should then have correct data to write upon. So again, with the discrepancies of *L. callunæ*. I have bred *L. quercus* very largely both from egg and larvæ found. I have never seen one of its larvæ with blue rings, both the males and females vary as to their shades of colour, at least my specimens do.—C. G. Cox, Fordwych House, Canterbury, March 16th., 1858.

Larvæ of Ægeria Bembiciformis.—In cutting willows, where *Æ. Bembiciformis* abounds, the rods ought to be taken off near the root, the larva, if present, will be on the stem about seven or eight inches up; cut a piece of the wood off, say fourteen inches long, the insect will be almost certain to be found in it; take it home, insert the piece either in damp moss or mould, placed in a box with a gauze cover; the willow will grow, and the perfect insect appear in due time. Should you have the larvæ only, then bore a hole two inches up the centre of a piece of willow large enough for the insect to bury in; the piece ought to be about an inch or an inch and a quarter in diameter; this will grow well in a finger-glass: by adopting this simple plan I rarely fail. Last year I bred a great many, and was delighted to see them take wing. I found they had laid their eggs on some young willow at my door—a grateful return.—Idem.

Larvæ of Sphinx ligustri.—The larva of *S. ligustri* feeds in this neighbourhood principally upon the Laurustinus. I took twenty-five off one small bush, a most unusual thing, as this, as well as all large caterpillars, I believe, are solitary feeders, at least my experience leads me to think so; but the larvæ of *S. ligustri* is found here frequently doing damage to the young hollies; every year I take them off my large holly trees. In the nursery-grounds near me they strip the young shoots bare; my servant recently brought me one in, that he dug up at the foot of a large solitary oak tree, far away from any other, it must therefore have fed upon the oak. (I may

add here that I have on several occasions found the pupæ of *C. vinula* on the stems of oak, concealed in its hard case.) With us it is rare to find the larvæ of *Ligustri* stung with ichneumon, also the larvæ of *S. ocellatus* generally free, but the larvæ of *S. populi* were very much affected, more especially the late brood. Speaking of this brood, with us, the colour is of a deeper shade, and nearly all have beautiful pink spots. A very curious instance of (I believe) ichneumon, occurred with me some time since. I bred a pale specimen of *S. populi*; three weeks after I had killed it the body fell off; it was filled with very small larvæ, but what they were I do not know. A study of the ichneumon tribe, I daily feel is more and more interesting, and I hope this season to commence collecting them. Perhaps you have a species with you that attacks *S. ligustri*; it is certainly a curious fact, although we abound with ichneumons in this neighbourhood, this insect should escape with almost perfect impunity, more especially considering its large size and bright colour.—Idem.

Camptogramma fluviala, Hub., a *Geometra* new to Britain.—One day last September, my brother and I were just leaving Branton Burrows after a tiring and rather unsuccessful day's work, when my brother started a little moth out of some dry rushes, which, after a short chase, he captured. When on the wing we took it merely for a *Scopula ferrugalis*, but on looking at it in the net, I saw it was a small *Geometra*, though what I could not pronounce at the moment. When at home, on examining it again, I took it for one of the smaller species of the genus *Phibalapteryx*, though I was by no means certain to which species positively to refer it. This winter, on arranging my insects, wishing to become certain as to the name of my little capture, I forwarded it to Mr. Stainton, who kindly informed me that it was *Camptogramma fluviala*, of Guenée, a species new to the British Islands. I dare say this account will prove interesting to the entomological readers of "The Naturalist."—MURRAY A. MATHEWS, Raleigh, near Barnstaple, March 15th., 1858.

Guenée's notice of the above insect is as follows:—

"*Camptogramma fluviala*. Hub.—280, 281. Treits, II, p. 55, et Sup., p. 207. Her. Sch., p. 175. Lah. 316. Led. 102. Larvæ unknown.—Hab.—Middle of France, Italy, Sicily, Central Russia in September. Always rare.

Of this little species Hubner appears only to have given a figure of those varieties having an interrupted band. Moreover it appears to me that even the slenderness of this band is accidental, for I do not perceive any other essential difference between this species and the following varieties.

A. Median band paler, continuous, not narrowed, and of middling size; subapical mark simply oblique and not angulated. Hab.—North America.

B. Median band as large as that of *Gemmata* and exactly of the same form. Hab.—Middle of France."

In "The Zoologist" for March, Mr. Doubleday points out the fact that the above insect has been confounded in British collections, with a still rarer moth, *Phibalapteryx gemmata*, Hub. The latter has been taken by Mr. Standish, and Mr. Harding, of Stapleton; Mr. Newcombe, and our correspondent Mr. Mathews. have taken the former during the last summer.

Mr. Doubleday says, "though closely allied, they are readily distinguished; the central black spot in the superior wing of *Fluriata* is destitute of the white iris, and there is a short oblique line at the apex of the wing, which is wanting in *Gemmata*." We hope collectors will look out for these species next summer.—ED.

Lasiocampa quercus var. *callunæ*.—I do not think from all that has been written about our Scotch *L. quercus*, that it can be considered specifically distinct from the English. In a species I look for characters in the perfect state, which shall separate it from every other species. These characters, in *L. callunæ* (so called) I have not been able to see. You can convert Mr. Crewe, however, by assuring him, that in Scotland, "from a batch of eggs laid by a ♀ *L. callunæ*," all the larvæ have blue rings when young, and all of them remain about ten months and a half in the pupa state. Mr. Crewe would like them to lie twelve or thirteen months in their cocoons, but I think he should not insist upon this, and, to be reasonable, should be satisfied with ten months and a half. Perhaps, however, Mr. Crewe's conditions are limited to England. The middle of August is the average time at which they spin their cocoons, the range being from July to the first week in September. The imago may be considered to appear on the 1st. of July, thus giving ten months and a half for the pupa state. This species being in this latitude so strictly biennial,* it follows that imagines of 1857 are not related in blood to their cousins (?) of 1856. I do not know whether this has been remarked before. In relation to this particular, I have observed that the perfect insects are more abundant every second year: 1855 and 1857 were plentiful years.—A. CHAPMAN, Bothwell Street, Glasgow, March 20th., 1858.

Half-broodedness v. Double-broodedness.—I have had two pupæ of *N. Dromedarius*, and five of *N. Camolina* two winters. They changed to pupæ in September, 1856.—Idem.

M. Guenée's change of names of the Geometræ.—We have received a letter from our friend Mr. Doubleday, in which that gentleman explains that we were in error when we stated that his Catalogue was formed on the basis of Guenée's nomenclature. We have much pleasure in making the following extract from Mr. Doubleday's letter:—"I have just seen 'The Naturalist' for April, and wish to correct a little error into which you have fallen, with regard to my list of insects. Guenée had nothing whatever to do with the arrangement or nomenclature of the *Geometræ*. When I undertook that Catalogue, I had no acquaintance with M. Guenée. * * * I subsequently supplied him with the names attached by Linnaeus himself, in the Linnean cabinet to the *Tortrices*. * * * M. Guenée has endeavoured in all his works, to restore the Linnean names where no doubt existed about them, and there can be no pretension for again changing these names." With reference to the species and varieties, Mr. Doubleday remarks,—"I have always thought *Fer-*

* I met with an exception once: one passed two winters as a pupa, thus making its duration of life three years.

ruginea and *Unidentaria* would eventually prove to be one species, and last summer I saw a series from the fens, in which there was every variation of colour, from the bright red to the black band. Mr. Eddleston, who has taken numbers of *O. filigrammaria*, seems positive that the Scotch specimens called *Autumnaria* are identical with it."—Ed.

Miscellaneous Notices.

Occurrence of the Parrot Crossbill, (Loxia pityopsittacus,) at Cheltenham.
—The occurrence of this rarely-observed bird deserves notice. The fact was communicated to me by Nathaniel Skelton, an observant naturalist and accomplished bird-preserved, residing at Cheltenham, in a letter, from which I annex the following extract:—"In April last, (1857,) there was a small flock of seven Common Crossbills about this neighbourhood. I found them several times, and killed four. On Sunday, June 7th., I heard a Crossbill calling in an apple tree. I saw it was a very fine red bird, quite alone. I went round to the fir trees in this neighbourhood to look for it five mornings following very early, and at last found it: it was alone as before. I killed it, stuffed it, and put it away, and in the course of two or three months after, I took it out and put it on a table with those killed in April, when I saw it was a larger bird, and on consulting Yarrell's History, it proved to be the 'Parrot Crossbill.'" From this it would seem that the note is very similar to that of the Common Crossbill: on that point Yarrell is silent.—W. V. GUISE, Elmore Court, March 2nd., 1858.

TO THE EDITOR OF "THE NATURALIST."

I write to inform you that I have this day shot a specimen of the Golden Plover in winter plumage in the marshes through which the Test runs in this parish. Not having seen one in this neighbourhood before, and finding no mention of this bird as occurring in Hampshire in your work on "British Birds," or in that of Mr. Yarrell, I think it worth mentioning to you, as I observe notices of such matters in "The Naturalist."—C. T. MAURICE, Michelmersh, Romsey, Hants, March 3rd., 1858.

Oil-Gland of Birds.—I said in the July number, 1857, that I should in a future one, make a remark on Mr. Waterton's "Essays in Natural History," and I now proceed to do so. In the preface to the work he states that he shall exclude all controversial matter, and yet subsequently he gives his comments on my remarks on the Oil-Gland of Birds, and omits all notice of my reply! True, I overturned his arguments, but if he shrunk from exhibiting his defeat, he ought, even in any ordinary case, to have kept back the observations which led to it, but how much more after the pledge to the public he himself had voluntarily given. I am content

to leave such conduct to the judgment of all honourable minds, and rest satisfied with the only inference which can be drawn as to Mr. Waterton's consciousness of his defeat, thus evidenced by his making a show of his side of the question, and carefully suppressing the other.—F. O. MORRIS.

Occurrence of the Fulmar Petrel, (Procellaria glacialis,) in the South.—This rare visitor to the southern parts of our Island was washed ashore here, near Kemp Town, on the 30th. January, 1858. It was picked up by a fisherman, and taken to Mr. H. Pratt, Naturalist, of Duke Street, Brighton, to be preserved and set up. It was found during a very heavy gale from the south-west. It had apparently been dead only a very short time; the eyes were turned black, and it is presumed that from some cause it had become blind, and naturally was starved to death. It is an adult female specimen, and the plumage in fine condition. In dissecting the bird, Mr. Pratt found it had what he calls a double windpipe; it has two distinct tubes inside, and running through the whole length of the windpipe,—a circumstance which neither Yarrell or Macgillivray has noticed, but I think most probably may be found in all the genus *Procellaria*.—T. THORNCROFT, Brighton, February 8th., 1858.

Fulmar Petrel off Brighton.—I have just secured a good specimen of the Fulmar Petrel, which was picked up blind off Brighton by a fisherman. This is the only instance I am aware of this bird having been met with in Sussex.—G. GRANTHAM, Hove, February 5th., 1858.

Birds shot in the Dumfries district.—January 2nd., 1858.—Buff-breasted Merganser, (*Merganser castor*.) 7th.—Bittern, (*Botaurus stellaris*.) 22nd.—Golden-eyed Garrot, (*Clangula chrysophthalma*), male and female. 28th.—Blue-winged Shovel-bill, (*Rhynchaspis clypeata*), female. 30th.—Short-eared Owl, (*Strix brachyotos*.) A variety of the Moorhen, (*Gallinula chloropus*), answering in every description to one described in your "British Birds," (vol. v., page 29,) as being shot at Branford, near Ipswich, Suffolk, December 16th., 1847.—W. G. G., Dumfries, February 8th., 1858.

The Little Grebe, (Podiceps minor.)—Having for some time past a specimen of this bird alive, I have had ample opportunities for observing its habits, which I have not noticed as being particularly noted. I had a very large globe with small fish in it, which the bird was able to go into when it pleased to feed, it being so tame as to dive after the fish before me, which it brought up and swallowed whole. When the bird is at rest I observed that it does not rest with the feet upon the ground as other birds do, but turns them up so as to place them under its wings, which it covers with its side-feathers so as to entirely hide them from sight. It will also rest in the same manner upon the water. I have never observed this bird

to sit erect as it is generally figured. When it walks it is nearly erect, with a waddling gait.—H. REYNOLDS, Thetford, Norfolk.

The Cry of the Rook.—The cry of the Rooks at the different seasons of the year, and on different occasions, can scarcely fail to be noticed even by the most indifferent observer. In "The Naturalist" for November, the Rev. F. O. Morris inquires thus:—"Do not my country readers agree with me that the cawing of the Rooks in September and October has quite a different sound from the note of the same birds in the winter or spring months? Whether it be the fineness of the air, at this the finest season of the year, that causes the effect, or whether the voice of the bird is itself different, certain it is, that to me at least, the effect is that I have just spoken of, and the sound most musical." Mr. Aird, a true poet of nature, in his rural poem of "Frank Sylvan," takes notice of their harvest call thus:—

"Has not the rook a harvest cry? A slight
Percussive breathing through her usual note,
Somewhat analogous to the Irish brogue?
A chuckle? that's too strong; we'll call it, then,
The *halitus* of a spirit crowding through
Her fuller voice, like thanks for God's good corn?
Is this a fancy or is this a fact?"

No doubt many are familiar with the cry of the Rooks during the breeding season, a cry which ever awakens in us pleasant associations of boyish days, when roaming amidst the fresh green woods of early spring, watching with delight the battles between the industrious and pilfering rooks; and again that curious croak or danger-signal given by the sentinel perched on the top of some high tree, to warn his neighbours that are industrious, feeding on the corn-fields below; then we have that clamorous cry which indicates a change in the weather; when, to quote from Mr. Aird,—

"High in the airy firmament, a troop
Of maddest revellers, see them wheeling round;
And oft with sidelong flight slant down the sky
They go; and oft with clanging wings, the one
Depending as if broke, swooping they fall
Near to the ground, then upwards shoot again:
They scream, they mix, they thwart, they eddy round
And round tumultuous, till all Heaven is filled
With a wild storm of birds! By this they show
Prescience of windy blasts."

But the finest cry is that joined in by all the "blackening train!" far up in the "pure ether," as they "thick urge their weary flight, and seek the closing shelter of the grove." This may be called their evening hymn.

The most curious cry of the Rook I ever heard was once while passing through a rookery, at the beginning of the building season. I found a Rook lying at the foot of a tree in a dying state, but without any marks of violence. Taking it up, I put it on a stone wall, and had scarcely left the spot when another descended from a tree, making several sweeps over its head, repeating each time a curious and mournful cry. On returning, half an hour afterwards, I found that the bird was dead.—W. G. G.

An Eagle Shot.—A large Eagle, which has been flying about in the vicinity of Arundel, to the terror of many, was shot on Friday last by Mr. W. Ottley, the head gamekeeper of His Grace the Duke of Norfolk. Since the singular visitor has been in the neighbourhood he has been aimed at by many sportsmen, who have been unsuccessful in bringing him down. We believe His Grace has on more than one occasion had an unsuccessful shot. Being a strong bird, and usually flying very high, it required some considerable force to kill him. On Friday last, however, Mr. Ottley, who was in a plantation in Arundel Park, between Bevis's Grave and the walnut trees, had a good shot, and succeeded in wounding him. The bird struggled considerably, and at length perched on a tree, from which he was soon levelled, and taken to the Castle, where, by direction of His Grace the Duke of Norfolk, he was laid out to be shewn to any one who chose to go and see him. After this the Eagle was sent to Mr. Ledbeater, the ornithologist, of London, to be stuffed. He turns out to be a young male of the White-tailed Sea-Eagle, and not a Golden Eagle, as was supposed. Mr. Ledbeater is also of opinion that it is a bird of the first year. Although the bird is of such a large size, measuring with its wing expanded seven feet five inches, it weighs barely ten pounds. The length from the beak to the tail is three feet, and the breadth across the shoulders one foot. The beak is three inches and a half long, and the centre talon two inches. The quill feather from the pinion joint measures twenty-three inches and a quarter. Its principal haunt was near the South Wood and Houghton chalk pit, and many mutilated rabbits have been picked up which have been killed by the distinguished visitor since he has been in the neighbourhood.—*West Sussex Gazette.*—From "The Times," Wednesday, Feb. 24th., 1858.

A totally New Idea.—It has occurred to me that some honest man among the entomologists might earn a good livelihood as follows; namely, if he lives in London, where he would have access to the British Museum and its collections. I say then that a great desideratum is, especially among entomologists in the country, and particularly with those who have other

employments, and are not able to give up so much time to their favourite study as they would wish, to have some person—to be depended upon both morally and scientifically—who could name species for them from time to time in the different orders; and if he were to receive a moderate but fair remuneration for the work, say half-a-crown or five shillings for every hundred species, depend upon it it would pay him well, while it would be an immense boon to those who, like myself, cannot as they would turn twelve hours into four-and-twenty or forty-eight. Even if not fully up to the work at first, he would soon become thoroughly “au fait” at it, by dint of examination and comparison at the Museum. “Practice makes perfect.”—F. O. MORRIS, Nunburnholme Rectory, April 2nd., 1858.

The Rev. F. O. Morris would be much obliged to any correspondent who would send him an Obituary Memoir of the late Mr. Richard Weaver. If the late Dr. Shirley Palmer had survived him, he would have done justice to a deserving man, whose merit is attested by the “contumely of the unworthy.”—Nunburnholme Rectory, March 16th., 1858.

Proceedings of Societies.

Thirsk Natural History Society—Botanical Exchange Club.—The monthly meeting of the Thirsk Natural History Society was held on the evening of Wednesday, the 3rd. of March. Mrs. Alban Atwood was duly elected a member of the Botanical Exchange Club. Mr. J. G. Baker read a paper by Mr. C. C. Babington, on the supposed new *Epilobium* from Gormire, and explained that the circumstances under which it grows altogether militate against the idea of its having been produced by hybridisation between *E. obscurum* and *palustre*. Mr. J. H. Davies exhibited specimens of *Cylindrothecium Montagnei* from West Yorkshire, Gloucestershire, Sussex, and Westmoreland; of *Hypnum salebrosum* from Gloucestershire; of *Orthotrichum Hutchinsie* from Cumberland; and of the true *Bryum turbinatum* from North Yorkshire.

The Retrospect.

THE BEST MODE OF SETTING LEPIDOPTEROUS INSECTS.

“*Utrum horum mavis accipe.*”

THE few observations I thought it necessary and desirable to make, “pro bono publico,” on Mr. Greene’s plan of setting Lepidoptera, will, I hope, be taken in no unkindly mood, nor the following remarks made necessary by his:—

Mr. Greene tells us that the size of the pins used must ever be a matter of taste. This is what I hope I may without offence characterize as a self-evident proposition; but when he had himself pointed out with proper animadversion the ordinary recipe, "Take the largest pin you can find, if with a gigantic head so much the better," etc. I shewed that in my opinion, taught by experience, he was himself recommending, to some extent, the very thing he was reprehending, and properly reprehending, in others.

2nd.—He asks me if I possess such insects as *A. atropos*, *S. ligustri*, and *S. convolvuli*, etc. I answer that I have, and have long had them; that I have four specimens of each of those species in my cabinet, fine ones too, the last-named being all of my own capture, which is perhaps more than many entomologists can say, and two of the *Atropos* of my own rearing, and that each and every one of them is set with a No. 13 pin, larger ones having already been long since and purposely removed from some of the others. I further assert that in "each and every" case of these, No. 13 is not only sufficiently large, but abundantly so for the proper fixing of those insects, both from above and below, and not only so but the appearance of each specimen is greatly improved and advantaged by the adoption of that size. As to my being alone in the preference for it to those he mentions, I can only say that I hope for the sake of the appearance of the cabinets of others, that the contrary is largely the case.

3rd.—Mr. Greene next states in reply to my suggestion that the depth of the boards should have been given, that the figure sufficiently represents it. If so, why, may I ask, did he himself think it necessary to give with the very same figure the depth and breadth of the groove, which the self-same figure might, according to him, have explained without the measurements?

4th.—In answer to my remark that his plan was not a new one, he says that he never said that it was. To which I similarly reply that I never said that he did. He did, however, I think, say something like it in saying that he "ventured to suggest" his mode "after many years trial." But, further than this, I have here to observe, that it was not unnatural for me to expect, as I certainly did expect (which thought perhaps it was that made me express myself as I did) something new, from the observation of my worthy co-editor in the No. for December, 1857, page 272, "On this point we shall, next month, give an admirable paper by the Rev. J. Greene, by studying which every one may insure good setting."

5th.—He points out that he did not exactly say, "move up the wing with the piece of wetted paper," but "hold it down when moved up." So be it. It seems to me at best but a clumsy way of doing business; and as to its being better than pinning the wings (though *pro tempore* only) with a minute pin, I must remark that the latter is not a plan that I

adopt myself once in two thousand times—the rounded wood system makes it unnecessary—but still, if it be used, the hole made by such a pin being invisible unless by means of a microscope,

("Cur in amicorum vitiis tam cernis acutum,
At tibi contra,
Evenit inquirant vitia ut tua rursus et illi.")

I should be inclined to give it the preference over the mode he suggests, which must at least, I should think, be liable to rub the wings, and so injure them, far more than the minute orifice I have spoken of.

6th.—Mr. Greene "emphatically denies" that the effect of the setting by means of the turned woods is better than his mode, or the process so quickly performed. I emphatically re-assert both assertions; and as to the danger of the threads rubbing the wings of some of the more delicate species, I should have supposed that "even a child" entomological would have known that the danger, which otherwise indeed would exist, is altogether and completely prevented by the well-known method ("omnibus notum tonsoribus atque poetis") of placing a piece of silver paper between the thread and the wings. (See the "Aphorismata" in my "History of British Butterflies.")

With regard to the quickness of the mode, I throw down the glove—not that I think that excellence is to be sacrificed to speed.

"Ecce,
Crispinus minimo me provocat: accipe si vis,
Accipiam tabulas; detur nobis locus, hora,
Custodes; videamus uter plus *setttere* possit."

I will set a hundred specimens of *Noctue* by my mode, and let Mr. Greene the same number by his. Let the setting of each be tested by an umpire, and he shall have my hundred specimens if they are not equally well set as his, and in less time.

I have only to add that I am inclined to think that few collections in England exceed mine in point of setting. I am in fact over-fastidious, and if he wishes, let any fair umpire be named by Mr. Greene, to compare his collection with mine, specimen with specimen, and I will give him every specimen of my own setting in my cabinet that is not so well set as his corresponding one, if he will give me each one of his that is not better set than mine. I will include my foreign collection in the challenge, as I relax and re-set all the specimens, to be compared with any such of his if he collects them.

Mr. Greene does not say how much slant the boards ought to have, as the best form, which would have been as well, instead of leaving it "ad libitum," inasmuch as specimens set by one person so often come into

the cabinet of another. Nor does he say what sort of pins should be used for the braces; yet this is a very important "point," for it will be found that pins strong enough for the purpose are too blunt to go well into the wood, as indeed he shews himself by recommending cork to be put at the bottom of the groove for the pin in the insect, and they therefore are liable to fall out, especially if one is travelling about. The French, more thoughtful, as I saw at Paris, use accordingly needles with heads of beads, made I suppose for the purpose, or of wax. The boards are however best made of cork, and then the common entomological pins can be used.

One advantage of the boards made in the way Mr. Greene shews, is that they may, if desired, easily be cut up into short lengths for using with the cotton thread, which so will be easier made than by turning.

I am not aware that the plan of using the turned woods is at all peculiar to the London Entomologists.

As to the superiority of the rounded over the flat method, though I prefer the appearance of the former, yet I am inclined to believe that in process of time it goes off very much, if not entirely, through the subtle influence of the changes of weather, and the natural elasticity of the wings, even in quite dry situations, safe from damp and mould. The form however is, as I have shewn, by no means the only advantage of the use of the turned boards.

One other remark of Mr. Greene's I must most strongly express my dissent from, namely, his recommendation that the pin should bend slightly forward. I hold on the contrary that it should be all but perfectly straight, and if anything slightly inclining backwards, and for this plain and palpable reason, that whereas the insect would look best without, if it were possible, any pin at all, so the next best thing must be to let it be seen as little as possible, and if it be leaned forward you catch sight of the whole length of the back, so to call it, of it; while if you look down upon it, it is so fore-shortened that you only see the head.

"Since the above was written," as the saying is, I put a copy of Mr. Greene's figure into the hands of the carpenter, and told him to make me a board according to it. He presently asked, entirely of his own accord, "How deep is it to be?" Let Mr. Greene do the same with any other carpenter, previously uninstructed by himself, and let us see whether he will not afford the same practical commentary on what I have said and on what Mr. Greene left unsaid.

I agree with Mr. Bree's recommendation of No. 15. Let the numbers stand thus: Nos. 18, 10, 15, 8, 13.

F. O. MORRIS.

Nunburnholme Rectory, April 5th., 1858.

Harlequin Duck, (*Fuligula histrionica*).—In "The Naturalist," vol. vii., page 163, there is a notice copied from the Davenport Journal, of a female Harlequin Duck shot at Maxstoke Castle, on the 7th. of April, 1857. I have lately made particular inquiries respecting the above, and I am informed, on *undoubted* authority, that the bird which was mistaken for the female of that rare Duck, was in reality a female Scaup Duck, (*Fuligula marila*).—HENRY BUCKLEY, Calthorpe Street, Birmingham, April 3rd., 1858.

The Querist.

{ *Feeding Snakes*.—The best way of feeding the Common Snake is to push a piece of bread soaked in milk, or a young mouse, down its throat, with a goose quill, (not cut at the end,) and then to leave the Snake entirely to itself, in a warm sunshiny place, for four or five days, with a saucer of milk in its box, only approaching it to change the milk. In this way I have always succeeded in getting Snakes to feed freely.—CHARLES ELLIS, Cookham Dean, Maidenhead.

In answer to John Brown's question as to the food of the English Snake, I think he will find that it will eat mice, and some of the smaller birds.—A. H., Spring Hill, Northampton, March 15th., 1858.

Bird-nesting in the Fens of Cambridgeshire and Norfolk.—Can any of the readers of "The Naturalist" inform me when is the best time for a Bird-nesting expedition into the Fens of Cambridgeshire and Norfolk? Also which are the chief spots that should be visited, and on what part of the coast are the principal breeding-stations of the Gulls, Terns, Guillemots, etc., situated?—HENRY BUCKLEY, Calthorpe Street, Birmingham, March 15th., 1858.

[Mr. M. C. Cooke, Trinity Church School, Lambeth, London, is the very person to give the above information; and I have no doubt he will be as willing as he is able to do so.—F. O. MORRIS.]

Melolontha vulgaris.—In "The Naturalist" for January, I saw a query about *Melolontha vulgaris* being found in a perfect state in the winter. I do not think that it is an uncommon circumstance, as I have three or four times found a considerable number collected together, in holes, under the roots of trees in hedges, in January and February; and last year, on one occasion, I found forty-eight in one bunch.—CHARLES ELLIS, Cookham Dean, Maidenhead.

[This seems conclusive.—F. O. MORRIS.]

NATURAL HISTORY OF SUNNINGHILL.

BY O. S. ROUND, ESQ.

CHAPTER II.

THERE is not, perhaps, in the whole extent of England to be found a village more widely scattered, or more rich in variety of soil, undulation of surface, or natural beauty, than that which I am about to describe. It lies in the extreme south-eastern corner of the county of Berks, some portions of it being scarcely one mile distant from the great western road, leading from London to Southampton, which divides the counties of Berks and Surrey. It is in longitude 40° west, and in latitude 25° . The junction of Surrey and Buckinghamshire is some seven miles distant, between the towns of Windsor and Staines, which lie to the north-east and east, and to which latter place a corner of the county of Middlesex reaches. The parish of Sunninghill is twenty-four miles west of London, and is bounded on the south and south-east by the parish of Old Windsor, to the west and south-west by Windlesham, and to the north and north-west and east by the parish of Winkfield. A branch road leading to the town of Wokingham or Oakingham, which is nine miles distant, and to Reading, the county town, which is sixteen to the west north-west, runs through the village, and is as good as a main highway, in fact it is such to a certain extent; although now that coaching days and all their glories are departed, it is no longer in the spick-and-span condition which whilom distinguished it. This district originally formed a part of the kingdom of Wessex, and is now in the deanery of Reading. That part which is now the inhabited portion, and where the houses chiefly cluster, may be arranged into three divisions; one of these comprehends an extent of three square miles, lying on the north-western side of the boundary line; another, which is about the centre, is not so extensive; and the last occupies the south-eastern side, very near the corner.

The first of these portions is, properly, the village, the oldest house at present standing being there. This group is irregularly built along the ridge or on the sides of a steep descent, running east and west, and facing to the north, and commanding a very extensive and romantic view of a moorland valley, called Sunninghill bog, from a line of marshes which occupy its base; a steep line of hill arises on the opposite side, on the summit of which the above-mentioned branch road runs; on the further side of which, again, is Ascot Heath, so well known for its sporting celebrity. On the extreme south-west there are extensive plantations of the Scotch pine, and the prospect in that direction is entirely of a heathy character; and here the hand of modern improvement has not been idle, and the once lonely "moor and moss," whose echoes were awoke only by the pee-pee of the

Fipit, or the bleat of the Snipe, now echoes to the wakening shriek of the locomotive, and trembles at its tread.

The second cluster of habitations stands in an exactly contrary position, occupying, as I have said, nearly the centre of the parish. This is placed on the sides and in the bottom of a valley quite divided from the rest, and nearly a mile and a half distant to the north-east, and known by the name of "Cheapside," and abuts upon Windsor Great Park and Virginia Water. In comparison with the first, the country in which this lies, may be termed highly cultivated, as it consists of arable and meadow, intersected with neatly-trimmed hedge-rows, and the odour of peat and turf, which characterizes the inhabited part of the wild district, is seldom met with here; it is altogether of a better style, and many mansions of the gentry, which occupy the rising ground in the neighbourhood, combine to render it the most superior portion. The other which I have mentioned, however, boasts a far more numerous list of the residences of "Les aristocrats," which are here clustered, as it were, extending from the church and parsonage, (which occupy a position between the inhabited parts as nearly central as possible,) and extending in a south-easterly direction on the sides of the road to London, which runs through the village.

The houses here are very irregularly scattered; mansions, mere cottages, and small shops of the place, being mingled in strange but not unpicturesque diversity. This district has had "from time whereof the memory of man runneth not to the contrary," the name of "Beggars' Bush." What was the origin of the appellation does not clearly appear, but it probably arose from camps of gipsies at some distant period, taking up their temporary sojourn within its limits. The character of the ground over the whole village is so very much varied, that it is impossible to describe it minutely, being a constant succession of hill and dale, heath and arable, park and meadow, and these so interspersed as to defy a classification. Intersected, however, as it is by these caprices of Nature, the centre ground is assuredly the highest;—the country falling to a considerable valley on all sides of it, although the quantity of wood that now clothes the great proportion renders this less perceptible to the general observer than it otherwise would be. Upon more minute examination, we shall find that a deep valley runs in an undulating and serpentine manner completely through the parish, beginning at its south-western extremity, and running by the church to the extreme east, where it is lost in the wide low flat of Virginia Water. The uneven nature of the roads more deserves the name of undulations than hills, which are in a very few instances really steep, and many of these have of late years been considerably lowered; but their general character very strongly proves the agency of water in their original formation. The whole surrounding country, to the eye of the most incurious

observer, evidently appearing like a vast basin of many miles in extent, of which this village forms the irregular eastern vent—a sort of outlet for the retreat and settlement of the waters, which in their tumult to escape, threw the mass of the then yielding soil into those commotions and contortions, for which it is at this day so remarkable.

(To be continued.)

MILDNESS OF THE PAST WINTER.

BY THOMAS FULLER, ESQ.

ANOTHER winter has passed into the chronicles of time, and few individuals remember one so remarkable for mildness; in fact the autumn which preceded was unattended with the chilliness so usually experienced at the latter part of that season; verdure was much longer sustained, and trees retained their leaves to a later period than usual. Christmas came without its general attributes, and not until the middle of February did stern winter make its presence known. A biting north-easterly wind, accompanied with severe frosts, then came upon us; snow covered the ground, and the dread season became fully developed.

“Sharp boreas blows, and nature feels decay;
Time conquers all, and we must time obey.”

The duration of this severe weather was brief; in a few weeks a sudden change came on.—

“Through the lurid chambers of the south,
Walked out the joyous Spring.”

My impressions in a ramble through the fields on the 14th. of March, I shall never forget; a complete change had taken place, and the genial warmth of the atmosphere was most grateful to the feelings. Thrushes and other birds, whose singing had been stopped by the late severe weather, had now resumed their songs with some new arrivals, and for the first time this year I beheld the Sky Lark in his aerial flight, and heard with unmixed pleasure his flowing wild notes, as faithful to his task in being the first to proclaim from aloft the coming of the vernal season; then came also for the first time the full note of the Blackbird. Thus are we rapidly approaching the genial Spring.

“Now on the rural kingdom roves
Soft pleasure with his laughing train;
Love warbles in the vocal groves,
And vegetation plants the plain.”

It is grievous to say how much the pleasures of rural excursions are

lessened by the perpetual warfare waged against the feathered tribes. Thrushes and a few other species continued singing all through the late mild winter, although thinned in number by the peripatetic sportsmen, who generally take the field about Christmas, and the few which remained rendered wilder, and nearly scared away; still a few were to be heard enlivening the short days with their cheerful notes until the severe weather in February set in. Then came forth gallant sportsmen, armed with double-barrels, shot-belts, and powder-flasks, traversing the fields, and peering into hedges, bringing down many a pretty songster.

Now and then during the short time snow remained on the ground, a glossy sable Blackbird, with golden beak, or a brown Thrush, with beautiful speckled breast, would appear on my lawn, and gradually approach the house with cautious series of hops, in expectation of food; but immediately your attention was caught and interest awakened, forth crept a cat from beneath the shelter of the nearest evergreen shrub, and scared your welcome visitor away. I have banished these detested cats from my house, but there is no means of ejecting them from my gardens, as they are fostered in the houses adjoining, and all gardens are alike subject to their depredations; no walls or fences have power to exclude them. With a view of keeping them clear of my premises, I have lately procured a rough Scotch terrier, of the Dandy Dinmont breed, and have trained him to as great an enmity to cats as Hannibal had to the Romans. The very sight of a cat from a window throws my *Pepper* into fits, and his excitement becomes quite amusing, until he is free to rush after the intruder; but his scampering and noise makes the remedy nearly as bad as the disease, added to which my friend *Pepper* has in his nature something of the character given by Edie Ochiltre to the worthy and eccentric Laird of Monckburn,—“His bark is wawr than his bite;” and this the cunning felines have discovered in this wise:—A few days back, Master Pepper was too quick for one of them, (a wily she —,) long my abhorrence; she turned upon him with open mouth, glaring eyes, and projected claws, ready for defence or assault. My less ferocious and good-tempered assistant drew back, and consequently lost his mission for terror. His bark now is daily less heeded.

I am pretty well arrived to the conclusion, that all attempts to study Natural History in the neighbourhood of a populous city such as this, amounts to the pursuit of knowledge under difficulties nearly insurmountable. The only chance of gratification in so agreeable and health-inspiring a recreation is in rural and retired districts. To such a spot I shall henceforward aspire.

Bath, March 20th., 1858.

ON THE APPEARANCE OF THE CUCKOO.

BY THOMAS FULLER, ESQ.

I AM very much inclined to question the truth of the statement, which has appeared in some of the north-country papers, to the effect that the notes of the Cuckoo were heard in a field near the village of Cleadon, in the county of Durham, on the 11th. of February last, as communicated by your correspondent, Mr. Barrington Cooke. That the weather was extremely mild for the season at that time is true, and it is a very common thing for trout to rise during this month, but the appearance of the Cuckoo in February is indeed a rarity; whether such an uncommon event is more likely to occur in the northern, than in the southern parts of England, I am not prepared to say. We have numerous sheltered valleys in this country, but I do not think the oldest individual living remembers such an instance.

A few years ago I was deceived myself. It was on a fine day in the early part of March, in a walk towards the village of Southstoke, about three miles from this city; the notes of the Cuckoo, as I then thought, came distinctly upon my ear, and returning home with such conviction, noted the circumstance down in my diary; but upon passing through the village afterwards, and speaking to a farmer on the subject, he laughed, and told me that a boy belonging to the village imitated the note of the Cuckoo so nearly as to deceive anybody not aware of the fact. Now had it so happened that I had left this neighbourhood in the interim, I certainly should have remained under the delusion of having heard the Cuckoo in the early part of March, and published it as truth.

As for the boys, mischievous as they are everywhere, they appear to be pre-eminently so here; there is no limit to the versatility of their pranks, and their number most certainly is far beyond proportion to the community, according to my observations in other places. One of the rascals attempted a hoax upon me this very morning. In my early walk before breakfast, going through a field, a rosy fellow, carrying milk into the city, met me, putting down his milk-pan, and sitting upon it,—“Don’t è hear the Cuckoo?” said he. Being quite unprepared for so interesting a question, I was for the moment deceived, and was just upon giving the best attention, when a wicked twinkle in the rogue’s eye, brought to my recollection that it was the first of April; so raising my stick, and flourishing it over his shoulders, I thought to frighten him, but the urchin saw in my countenance nothing to alarm him; one of his companions came up at the moment, and pointing to my feet, ejaculated “Why the gentleman’s shoe is untied!” I was again taken off my guard, and looked down at my understandings, the

nimble jesters were out of the reach of my stick in an instant, in hearty laughter calling out, "Oh you April fool!"

The Wryneck, which always precedes the Cuckoo, I heard the first time this year on the 24th. of March. This bird is called by the country-people here, "the *Pea-bird*," or "the *Cuckoo's Mate*." The weather is extremely cold to-day, a north-easterly wind is prevailing, with every appearance of a severe frost to-night. Now whilst I am writing, a Jackdaw has pitched upon the wall of my garden, only a few yards from the window. My wife declares it to be a Rook, and the size of the bird (rendered larger in appearance by its close proximity) warrants the supposition, but his grey pole leaves no doubt of his species. He is a fine specimen, truly; well, I had no idea before that he had such a bull-shaped neck.

Back, Pepper. Be quiet, this is no case of cat, (whenever my eyes are directed towards the garden, the dog's attention instantly follows, holding himself ready for active service in event of feline intrusion.) What is it the Jackdaw is watching so intently upon the ground? Perhaps a bone or piece of meat has been left there by Pepper. He is off. No doubt his sharp eye has detected an enemy somewhere. Yes, there is a cat under that Portugal laurel; verily it is the same ferocious —— noticed in my last communication. Now Pepper, after her my boy; let me open the door—there he goes like an arrow—the creature turns at bay. Pepper is as brave as a lion, but he is not savage; at a word of encouragement from me he would, according to the sporting phrase, *go in*. But we will have no fighting and scratching. Come away Pepper, before thy sharp teeth can have penetrated thy antagonist's furry skin, her terrible hooked claws would tear out thy bright intelligent eyes; so come away, I say, my stick shall effect an ejectionment from my premises, which is all neighbourly feelings allows. But this communication is already longer than intended.

Bath, the first of April, 1858.

[Mr. Fuller's new enemies, the boys, reminded me of his old ones, the cats, before I came to his mention of them. I fear the Somersetshire boys are behind our Yorkshire ones in manners. Much is to be attributed to the schoolmaster. There was no school at my previous parish of Nafferton till I had two built there, and in like manner none here till I got one built, the effect on the "civilization" of the children being in each case most marked and striking.—F. O. M.]

Entomology.

LIST OF LEPIDOPTERA OCCURRING IN THE COUNTY OF SUFFOLK.

BY THE REV. JOSEPH GREENE, M.A., ASSISTED BY THE REV. H. HARPUR CREWE, M.A.,
AND C. R. BREE, ESQ.

[The portions of these papers contributed by Mr. Crewe and Mr. Bree, are signed with the initials C and B respectively. N.B. at the head of a paragraph signifies that the remarks are made after those of Mr. Greene.]

(Continued from page 111.)

63. *N. trepida*.—Tolerably plentiful. As far as my experience goes, there are only two methods, which present a reasonable prospect of success, of obtaining this insect, namely, by breeding from the egg, or by digging for the pupa. The beautiful larva is such a conspicuous object, that it frequently becomes a prey to hungry birds, and is at the same time so subject to the attacks of ichneumons, that I do not think one in five escapes both these enemies. While on the subject of pupa-digging I may mention one great advantage of it, namely, the large size of some of the specimens obtained in this way. It will readily be admitted on all hands that insects bred in confinement rarely, if ever, attain the size they sometimes reach when left to their own devices. This may easily be accounted for. It is almost impossible, (in a town quite impossible,) to keep them constantly supplied with fresh juicy food—there must always be a comparative absence of pure air, and lastly, there is in many cases a want of what I consider very necessary, sufficient moisture. I am quite satisfied that in a state of nature larvæ drink: I do not say this in an offensive sense—I only insinuate that they drink *water*. That they do so in captivity is beyond all question. Sprinkle a few drops of water occasionally in your breeding-cage, and watch a caterpillar the moment its mouth touches a drop. If of moderate size and tolerably thirsty, he will not leave it till the whole is imbibed. This I have noticed over and over again, and consequently I always dash a little water over their food, about once every two days. I had nearly forgotten to remark that the larva of this species is one of those which I have observed to be subject to what is called muscardine, a name, given I suspect, to cloak our ignorance. What is muscardine? The larvæ, which feeds, I think, exclusively on oak, attains a large size, and before entering the earth assumes a much darker appearance. There is, I believe, no question as to its being only single-brooded.

N.B.—The larva of this insect is taken sparingly in this neighbourhood. I have never found the pupa by digging. I bred it, in my study, in 1857, between March 29th. and May 13th. “Muscardine” is probably a corruption of “^{cell}Muscadines”—the small ^{cell}Hyphomyces ^{cell}Fungi which form moulds and mildews. (B.)

I have several times dug up the pupa under oak, but have never taken either the larva or the perfect insect since my residence in Suffolk. I have

beaten the larva into a sheet and umbrella in Kent and Herts., from the 1st. to the middle of July; they varied from half-fed to full-grown. In 1856 I took two perfect insects when staying in Hampshire, with my friend Mr. Hawker, a ♂ May 6th., and a ♀ May 8th. Mr. H. took a crippled ♂ April 29th. They were all resting on the trunks of oak. My ♀ laid a number of eggs on the evening of her capture: they hatched May 26th., and were full-fed July 12th. The pupæ (kept in the house) began to emerge March 29th., 1857, and continued doing so till May 1st. Four couples of moths paired in the cage; the females laid a great number of eggs. The first batch laid April 23rd., began to hatch May 11th., and the others took about the same time. I was most unfortunate with them—out of each lot more than half perished when on the point of hatching. Those larvæ which came out never appeared healthy, and gradually one after another sickened and died: I only succeeded in obtaining one pupa from the whole lot. I sent a great many eggs away to various friends, but they were nearly all as unlucky as myself: I am quite at a loss to account for the reason. When full-fed and ready to bury, the larvæ assume a dirty purplish hue. It is, in my opinion, one of the most beautiful of our British larvæ. I have seen both *P. nubeculosa* and *E. versicolora* full-fed, but do not think them fit to rival *trepida*. The egg resembles that of *P. palpina*, but is of course larger. I know of no moth which is so dwarfed by being reared in confinement. (C.)

64. *N. chaonia*.—Scarce. This insect seems to be rare everywhere. I have only once met with the larva: it is much larger than that of *dodonæa*, glossy, fat, whitish green, with a row of yellow spots on each side above the legs, and two yellow lines down the back. It resembles a good deal that of *dictæa*. Mr. Stainton, in the "Manual," gives July as the time for finding it. I should say this was too late, as I took the specimen alluded to above, quite full-fed, in fact it went down the same day, the second week in June. I have occasionally dug up the pupa mixed with that of *dodonæa* in the proportion of about one in thirty, but it goes down much earlier. It (the pupa) is somewhat shorter, stouter, and more glossy than that of *dodonæa*. I once had a pair couple; the female laid a great number of eggs all over the breeding-cage, but I was unfortunately from home, and they all perished. The egg is large, and if I remember rightly, pure white. The male is a furious and distracted fier, and speedily spoils itself. As far as my experience goes, the larva feeds exclusively on oak, and, like nearly all the species in this genus, the parent seems to prefer detached trees, whereon to lay her eggs.

N.B.—I had two specimens last year from larvæ found on oak, the first appeared April 21st., ♀ the second ♂ May 16th. I found a single larva on oak, full-fed, June 7th., 1857. I bred a ♀ this year, April 27th. (B.)

I have beaten two or three of this larva every summer since 1852. I never, with one exception, saw it before the 1st. of July, nor after the 15th., but have taken it of all sizes between these two periods. The exception I allude to is mentioned by Mr. Bree; he and I beat a full-grown larva last summer, June 7th. Till nearly half-fed this larva and that of *N. dodonæa* closely resemble one another. Both have the yellow dorsal stripes, and

indeed are so much alike, that it is difficult to distinguish them. When, however, they have moulted for the last time, the merest tyro cannot confound them, as there is little or no similarity. *Chaonia* moreover, is generally at least three weeks earlier in its appearance than its congener, and they are not likely very often to be beaten together. When full-fed the yellow dorsal stripes become almost invisible. I have bred the perfect insect five times from the larvæ, May 14th. and 16th., 1853, and April 8th., 17th., and 21st., 1856. The pupa were kept in the house. It is a delicate insect to rear in the larva state. I have once or twice killed it by giving it the young sucker leaves of the oak; cholera soon ensued, and death speedily followed. I have found as a rule that larvæ should never be fed upon the rank sucker leaves of the tree upon which they feed. It invariably disagrees with them.

65. *N. dodonæa*.—Very plentiful in the pupa state. The larva, which is very subject to the attacks of a large black ichneumon, is full-fed about the end of July. Those which are occasionally found in August rarely produce the perfect insect, being almost invariably stung. The imago varies much in the intensity of colouring, according to locality. The first specimens I ever found were taken in Gloucestershire, and were much darker and more richly coloured than those taken subsequently in Suffolk. Indeed all the insects taken in the former county excelled in depth and richness of colouring. This was noticeable in the pretty *O. coryli*, where the dull grey ground colour usually seen in that insect was replaced by a creamy yellow. Two of these specimens were exhibited at a meeting of the Entomological Society. The male of *dodonæa* is a strong and active flier. The larva feeds, I think, exclusively on oak.

N.B.—I take both larvæ and pupæ but sparingly of this insect. (B.)

I have but rarely beaten the larvæ of this insect, and when I have it has invariably been stung. The pupa is far from uncommon in Suffolk under oak, but local. In this neighbourhood it is decidedly rare. It is fond of getting into the little ledges and nooks at the foot of the stem, where is only just enough soil or moss to cover it. "The early bird gets the first worm," and if the collector does not go and look for the pupæ at the end of September and the beginning of October, he will find that he has generally been forestalled by mice, titmice, nuthatches, and other insect-hunters. The larvæ when full-fed may always be distinguished by the bright orange-red stripe on the side. The larvæ of the three last-named species feed exclusively on oak, and there is, I believe, no question that they are only single-brooded. (C.)

66. *D. ceruleocephala*.—Extremely abundant in the larva state. I presume the eggs are laid in autumn, and pass the winter in that state, as I have never met with the hibernating larva. I have been told that they are cannibals, but I have not noticed it myself, though I have had as many as forty in one cage. Possibly they may devour other caterpillars, but I have not exposed them to the temptation. They have powerful jaws, and the cage must be covered with something stronger than gauze, as they are very restless, and soon eat through it. I have never once seen the insect on the wing. The pupa may sometimes be found in August and September, under loose bark on old hawthorns, crab-apples, etc.

N.B.—If I were to decide from my own experience, I should at once say that the larvæ of this insect were not cannibals. When a boy I have crammed them by shoals into a small and almost air-tight box, like slaves in the hold of a ship, and subjected them to treatment of the most aggravating description, but never in one single instance remember to have seen them bite or devour each other. My friend Mr. H. Evans, has told me that he has seen the perfect insect in some abundance around the gas-lamps in September and October. The larva very frequently feeds upon the young leaves of the common laurel in spring, and apparently rather likes prussic acid than otherwise. (C.)

67. *P. bucephala*.—Common of course. I noticed this insect for the first time in the perfect state last year. I saw several specimens hanging suspended from the under side of leaves, with the wings folded completely round the body, like a little roll of cloth.

N.B.—I have not unfrequently seen this insect sitting on a blade of grass just after it had emerged from the pupa. Though one of the commonest it is one of the loveliest of our British Lepidoptera. (C.)

68. *C. curtula*.—Not very uncommon in the neighbourhood of Brandeston, but much rarer at Playford. Having mentioned the habits, so far as I am acquainted with them, of this insect in the larva and pupa states, in my paper on pupa-digging, I need not recapitulate them here. I observe, however, in the "Manual," that the larva is said to be taken in the months 6, 7, 8, and 9; from which I infer that it is asserted to be double-brooded. This assertion, I suppose, rests upon the authority of M. Duponchel, from whom the description of the larva is taken. Mr. Stainton, after giving May as the time of its appearance in the perfect state, properly puts a note of interrogation for the period of the *second* appearance, as if in doubt. I fully share his doubt. I have never met with the larvæ earlier than the second half of September, and from that on to the end of October. The imago has always appeared in May. I scarcely think there are two broods, but I speak with diffidence.

N.B.—I am certainly inclined to think that this insect is double-brooded, but cannot speak from personal experience. Mr. Sealy, however, tells us, "Intelligencer," No. 44, page 41, 1857, that on July 2nd. he took in Wicken Fen a full-fed larva, which spun up the next day, and produced the perfect insect July 20th. M. Duponchel and Guenée remark that like *C. anastomosis* the larvæ is found in June and July, and again in August and September, and that the former *all* produce moths in July, whilst of the latter some emerge in September and October, and others remain in the pupa state till the following May. I have myself never taken the larva except in the autumn. I have beaten it both in Suffolk and Kent from September 4th. to November 4th., both from aspen and black Italian poplar: the moths all emerged from March 17th. to April 19th. The larva is stouter and of a much redder colour than that of *C. reclusa*. The following description taken from a full-fed specimen, may be interesting to some of the readers of "The Naturalist:."—Length about one inch; pinkish drab, yellower on the back. Down the centre of the back three interrupted black lines; ditto on each side; the two

outermost dorsal, and the side lines studded at regular intervals with yellow wart-like spots; on the fourth segment and last but one a black protuberance. The whole body covered with irregular black spots, and thinly clothed with white hairs. Head black, with two orange central lines. When young it has a broad black band on each side, and a transverse dorsal one by each protuberance. I have taken this larva and that of *C. reclusa*, feeding together upon the same bush in autumn. (C.)

69. *C. reclusa*.—Not uncommon at Brandeston, in company with the preceding; not seen at all at Playford. It seems to prefer willow, but will also feed on poplar. When young, and feeding on the same tree, it is difficult to distinguish from *curtula*. I believe it is sometimes double-brooded, though I have not observed it myself.

N.B.—I have taken this insect in the larva state plentifully both in Kent and Hants., but have not, as yet, met with it in this neighbourhood. Mr. W. Baker has taken it at Ringshall, four miles from here. I am most decidedly of opinion that it is double-brooded. On the 23rd. of June, 1855, I found a small brood of larvæ in Kent, nearly all full-fed: they spun up, and *all* produced the perfect insect during the month of July, in about ten days after turning to pupæ. June 24th., 1856, I took about forty larvæ in Hants., of all sizes; these *all* produced moths between July 14th. and 28th. My friend Mr. Hawker, with whom I was staying, took an equal number of larvæ, and met with a precisely similar result. The females laid plenty of eggs, but they were unfortunately not impregnated. I have taken the larvæ as late as November 4th. I only once found it upon *willow*; it prefers *aspen*. (C.)

(To be continued.)

Notodontinæ Double-brooded.—The summing up of Mr. Greene's letter on the *Notodontinæ* in the last number of "The Naturalist" is rather extraordinary. He says, "I cannot give my assent to the statement that either *Camelina* or *Dictæa* is naturally double-brooded until one or more of the pupæ of these species, dug up in a normal state, produces the perfect insect the same year. I dig at poplars, oaks, elms, etc., all the year round, but I never found a pupa of either between the first week in June and the last week in July." This is making a bold assertion, in denying the truth of the double-broodedness of the *Notodontinæ*, because he has not met with the pupa during the months of June and July. I suppose that Mr. Greene does not mean to deny that the imago has been taken in the first week of August; I myself have captured them again and again in the beginning of that month, just emerged from the pupæ in fine condition. How does Mr. Greene account for the insect being on the wing in August, if he denies its existence in the pupa state in the months of June and July? Surely the pupa might have been dug up if the collector had known where to have looked for it. Neither Mr. Harding nor myself dispute the fact that some of the pupæ lie over till the spring, but if this circumstance proves them single-brooded, what would Mr. Greene call *Lanestris* that sometimes lays by for

three or four years? If the argument holds good in one case, it certainly must in the other. Although our having bred and taken *N. dictæa* in May and August has been repeatedly stated, I may as well briefly allude to my experience during last season:—May 23rd., *Dictæa* eggs laid. June 1st., eggs hatched. July 25th., imago, (all the brood came out.) August 3rd., eggs laid. August 9th., eggs hatched. This brood, I am sorry to say, met with an accident, or doubtless I should now had them emerging from the pupæ. I have taken it on the wing in the beginning of May, and again in *equal numbers*, and in as fine condition, early in August. What further proof is required I am at a loss to know.—ARTHUR NAISH, Brooklyn Lodge, Ashley Hill, Bristol.

Early Appearance of Sphinx ligustri.—In the afternoon of April 28th., I was much surprised to see in my pupa box, a fine specimen of *Sphinx ligustri*, which had just emerged from the pupa. Is not this very early, considering I had only had it in my box a week or ten days, which was placed in a cool apartment. The perfect insect is rarely seen on the wing in this neighbourhood, although the larvæ are extremely abundant.—A. H., Spring Hill, Northampton.

[Should our correspondent favour us with any other communications, we should feel obliged if he will append his name, as it is against our rule to insert matters of fact unless the statement is authenticated by the name of the writer.—ED.]

Uncertainty in the Appearance of Insects.—On March 14th., 1855, I took, at Acton, a beautiful specimen of *Phragmatobia urticae*. Whilst pupa-digging next day at Battersea, in the new park which was then forming, I found a splendid *Notodonta dictæa* just drying its wings. You would not give the middle of March for the appearance of *P. urticae* and *N. dictæa*. I have had *N. dromedarius* and *ziczac* coming out at long intervals. It is therefore only by collecting numerous facts that we can generalize.—C. T. COX, Fordwich House, March 15th., 1858.

Notodonta ziczac Double-brooded.—That *N. ziczac* is double-brooded I have not the *slightest doubt*, in my own mind I have quite settled the question. I had some eggs of *Ziczac* sent me last May; the following are the dates of their appearance in the larvæ state:—May 21st., eggs hatched; June 30th., all larvæ buried; July 23rd., first moth emerged. I continued breeding till August 3rd., when the last moth made its appearance; not one remained in pupa. From a pair of these insects I obtained fertile eggs, which hatched August 15th. They duly fed up, and are now in pupæ. I hope to see the perfect insects next May. I may as well remark that I found two larvæ full-fed July 13th. The moths both appeared at the beginning of August. I think this is proof enough that it *is* double-brooded.—G. F. MATHEWS, Raleigh House, near Barnstaple, February 11th., 1858.

The Notodontæ are Double-brooded.—I think I can easily reply to my friend Mr. Greene's criticisms in the May number of "The Naturalist." At page 84 of the number for April, he remarks that he has bred *N. camelinea* from pupæ dug up the previous autumn, from the middle of May to the

end of August. I have no doubt he has. I have myself bred *N. camelina*, *dictæa*, *dictæoides*, and *dromedarius*, from May to July, from autumnal pupæ. Now what I mean to say is this: the moths which appear in May are the parents of another brood of moths in August. The moths which appear in June are the parents of those pupæ which Mr. Greene digs up in August, and which he has tried to force, but without success. Some of these latter are also doubtless the offspring of the dilatory pupæ of the previous autumn, which cannot make up their minds to emerge till August. Mr. Greene seems to think it impossible for an egg of a *Notodonta* to hatch, feed up, and spin in a month's time. All I can say is this; on May 23rd., 1854, I had a batch of eggs of *N. ziczac* and *cucullina* hatching; on June 23rd., the larvæ began to spin up. I certainly never have myself seen the larva of *N. dictæa* spin up between leaves, and all those which I have had full-fed in July invariably buried. I have not unfrequently, however, had the larvæ of *camelina* and *ziczac* from a cocoon between leaves.—H. HARPUR CREWE, Stowmarket, May 8th., 1858.

Nomenclature.—I have some thoughts of beginning an entirely new collection, and in any case it would, I think, be a great boon to many if you would tell us briefly, as at present nomenclature is at such sixes and sevens, since Curtis's and Stephens's Catalogues, from what sources, in all the orders, cabinets may best be named. The same also as to the foreign insects.—X.

[Our correspondent will find most of the families in entomology well arranged in the lists of the British Museum. *Hymenoptera*, by Smith; *Diptera*, *Homoptera*, and *Neuroptera*, by Walker; *Hemiptera*, by Dallas; *Anopleura*, by Denny; *Coleoptera*, by White, J. Smith, and Walton. The best arrangement of the *Lepidoptera* is that of Guenée. Mr. Doubleday has in the press a second edition of his Synonymic list of British Lepidoptera, arranged after Guenée. Mr. Stainton's list of the British *Tineina* is the best yet published. There is a very good Catalogue of European *Coleoptera* called the "Stettin Catalogue," which Mr. Stainton will send for seven stamps. Neither Curtis nor Stevens will do in the present day for naming cabinets. Collectors must not be too impatient; these are works requiring immense labour and great knowledge, and are not very remunerative. Some of the British Museum Catalogues are exceedingly well done, such as Smith's British *Hymenoptera*, Walton's *Curculionidæ*, etc. They are printed on one side for labels, as well as in small treatises. Messrs. Dawson and Hamlet Clark have commenced a Catalogue of British *Coleoptera*, but they have only as yet published the *Geodephaga*.—ED.]

Hypercriticism.—Bad orthography is a great blemish in a work claiming a scientific character. On pages 35 and 36 of "The Naturalist," the words *Menthastri* and *lubricipeda*, are spelt wrongly no less than eight times. To stay the progress of error, it would be well to correct these errors as early as possible.—THOMAS CHAPMAN, Glasgow, May 6th., 1858.

[Nothing in our opinion is so trifling as to see men claiming to belong to a scientific community, wasting their energies in finding fault with other peoples' p's and q's. There is no doubt that Fabricius spelt the names as

indicated by Mr. Chapman, but if he will look into Doubleday's List, and Stainton's Manual, he will find in one *Menthrastris*, and in the other *Lubri^æpeda*; showing at all events, that our contributor has erred, if such a trifle can be designated error, in company with modern entomological authorities.—ED.]

Lasiocampa callunæ.—In taking up the last number of "The Naturalist," I find that Mr. Chapman states *Callunæ* to be a variety of *Quercus*, and am very sorry he has not given us some proof of this. He only states that the larva when young is quite different, but he wishes to see a distinction of character in the perfect state. This he states he has never been able to do. From this I should conclude that he must have examined all specimens of *Quercus* or *Callunæ*, for the difference is very great. First, both males and females are larger, and of a different colour. The spot on the wing of the female of *Callunæ* is larger, and the band on the male is broader and runs up the nerves of the wings, quite different from *Quercus*. A description was given some years back in the "Zoologist," by the late Richard Weaver; he wrote to me when in Scotland last season, to notice this species, and to make some observations on them, to prove whether they were a species or not. I did so, and recorded my notes in the "Zoologist" two or three months back; but such is the uncertainty of human life that these observations poor Weaver never saw. That *Callunæ* is not a Scotch variety, is proved by the species having been captured in England in several different places, but always in low wet places, as in Scotland. I wish Mr. Chapman, or some other northern entomologist, would be so kind as to send me up a virgin female of *Callunæ*, to see if I could attract any males of *Quercus*. I failed in this once, but should like to try again.—H. J. HARDING, 1, York Street, Church Street, Shoreditch.

Capture of Deilephila livornica near Exeter.—The capture of *Deilephila livornica* not being of common occurrence, particularly in the month of April, it may be worth recording that on the 20th. instant, a male specimen of this insect was taken at rest on the ground, in a garden near my house, and is at present on my setting-board.—H. DORVILLE, Alphington, near Exeter, April 22nd., 1858.

The First Fly of the Season.—As I drove to Louth on Wednesday last, in the parish of Elkington, I saw a beautiful specimen of *G. rhamni*, (Brimstone Butterfly,) a male, though snow was still remaining in many places in the woods.—R. P. ALINGTON, Swinhope, March 19th., 1858.

SYSTEMA NATURÆ.

BY THE REV. F. O. MORRIS.

(Continued from page 65.)

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| Phascogale murina, <i>Waterh. Schinz.</i> | Phascogale albipes, <i>Waterh. Schinz.</i> |
| Phascogale minima, <i>Temm. Cuv. Schinz.</i> | Phascogale apicalis, <i>Gray. Schinz.</i> |
| Dasyurus minimus, <i>Geoff. Schreb.</i> | Phascogale leucopus, <i>Gray. Schinz.</i> |
| <i>Desm. Fisch.</i> | |

DIDELPHIS.

- Didelphis virginiana*, Shaw. *Desm. Tem.*
Cuv. Fr. Cuv. Fisch. Schinz. D.
marsupialis, Schreb.
Didelphis Azaræ, Temm. *Desm. Cuv.*
Fisch. Schinz.
Didelphis californica, Bennet. *Schinz.*
Didelphis breviceps, Bennet. *Schinz.*
Didelphis pruinosa, Wag. *Schinz.*
Didelphis cancrivora, Linn. *Gmel.*
Desm. Fisch. Schinz. D. marsupi-
alis, Linn. *Schreb. Temm. Cuv.*
Didelphis aurita, Schinz.
Didelphis albiventris, Lund. *Schinz.*
Didelphis Quica, Natt. *Temm. Fisch.*
Schinz.
Didelphis myosurus, Temm. *Schinz.*
D. nudicaudata, Geoff. *Desm. Cuv.*
Didelphis Opossum, Linn. *Desm. Tem.*
Schreb. Fisch. Schinz. Sarigue
Opossum, Buff.
Didelphis Philander, Linn. *Schreb.*
Temm. Desm. Schinz. D. Cayopolin,
Cuv.
Didelphis elegans, Schinz.
Didelphis incana, Lund. *Schinz.*
Didelphis Derbiana, Waterh. *Schinz.*
Didelphis pœcilonotus, Natt. *Schinz.*
Didelphis dichrurus, Natt. *Schinz.*
Didelphis ochropus, Natt. *Schinz.*
Didelphis maerotarsus, Natt. *Schinz.*
Didelphis microtarsus, Natt. *Schinz.*
Didelphis velutina, Natt. *Schinz.*
Didelphis unistriata, Natt. *Schinz.*
Didelphis affinis, Natt. *Schinz.*
Didelphis domestica, Natt. *Schinz.*
Didelphis crassicaudata, Schinz.
Didelphis lanigera, Desm. *Wag. Schinz.*
Didelphis cinerea, Tem. *Desm. Schinz.*
Didelphis dorsigera, Linn. *Schreb.*
Temm. Fisch. Wag. Schinz.
Didelphis murina, Linn. *Desm. Temm.*
Schreb. Cuv. Wag. Fisch. Schinz.
Didelphis grisea, Desm. *Schinz.*
Didelphis tricolor, Geoff. *Schinz. D.*
macroura, Pallas.

Didelphis brachyura, Schreb. *Temm.*
Desm. Fisch. Schinz.

Didelphis pusilla, Desm. *Wag. Schinz.*
Didelphis tristriata, Kuhl. *Schreb.*
Schinz. D. trilineata, Lund.

CHIRONECTES.

Chironectes variegatus, Schinz. *C.*
Yapok, Desm. *Didelphis palmata,*
Geoff. Griff. Fisch.

FAMILIA II.—ENTOMOPHAGA.

MYRMECOBIUS.

Myrmecobius fasciatus, Water. *Schinz.*

TARSIPES.

Tarsipes rostratus, Guer. *Schinz.*

PERAMELES.

Perameles nasutus, Geoff. *Desm. Cuv.*
Fr. Cuv. Griff. Schreb. Schinz.
Perameles obesulus, Geoff. *Desm. Less.*
Schinz. Didelphis obesula, Shaw.
Perameles doreyanus, Schinz.
Perameles Gunnii, Gray. *Schinz.*
Perameles lagotis, Reid. *Water. Schinz.*
Perameles Tuckeri, Gray. *Schinz.*
Perameles myosurus, Wag. *Schinz.*
Perameles macrourus, Gould. *Schinz.*
Perameles Harveyi, Waterh. *Schinz.*
Perameles Lawsonii, Less. *Schinz.*

CHÆROPUS.

Chæropus castanotis, Gray. *Schinz.*
Perameles ecaudatus, Ogilby.

FAMILIA III.—PHYTOPHAGA.

PHALANGISTA.

Phalangista ursina, Temm. *Less. Cuv.*
Schinz.
Phalangista chrysorrhos, Temm. *Cuv.*
Fr. Cuv. Fisch. Schinz.
Phalangista maculata, Temm. *Schinz.*
Cuscus maculatus, Less.
Phalangista macroura, Schinz. *Cuscus*
macrourus, Less.

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| Phalangista cavifrons, <i>Temm. Fisch.</i> | Phalangista vulpina, <i>Desm. Temm. F.</i> |
| <i>Wag. Schreb. Schinz.</i> P. rufa, <i>F.</i> | <i>Cuv. Griff. Schinz.</i> Didelphis vul- |
| <i>Cuv. Desm.</i> P. alba et rufa, <i>Geoff.</i> | pina et lemurina, <i>Shaw.</i> |

(To be continued.)

Miscellaneous Notices.

Tortoises.—About two years ago Mr. Cooch, of Cromer, had a Tortoise given him, which he thinks had not been long in this country. Having been placed in his garden, it was found to have scratched a hole in one of the borders, and laid three eggs. Also a Tortoise in this garden laid one egg, and died the following winter.—The VEN. ARCHDEACON GLOVER, in a letter to Mr. Bree.

Peregrine Falcon.—On reading the "Anecdote of a Sparrow," at page 66 of "The Naturalist" for the present month, it occurred to me that the following somewhat similar suspension of the power of flight in a more noble bird, might be worth inserting among your Miscellaneous Notices. Some winters ago, two labourers brought me a very fine live specimen, I believe of the *Falco peregrinus* of Linnæus, which they had picked up in a field about two miles east of this town. It was in excellent condition for stuffing, perfectly clean, and without the least appearance of having been shot. I could not at first believe that a bird looking as that did was unable to fly; but, on raising it up, and letting it go to try, it fell to the ground on its breast, without being able to use its wings in the least, not even to break its fall. I put it in a box, with the intention of sending it to a friend of mine at the Ashmolean Museum, to get it stuffed for me in Oxford, but as I was covering the box over, my daughter, who was watching the bird, gave him a piece of raw meat. This he eat very quickly from her hand, which induced me to take him out again, hoping that I might be able to keep him alive. I placed him in my kitchen, where he was well fed, and at liberty to walk about, but the bird did not seem inclined to do so for some days. He afterwards began to jump on the spars of the chairs, but still seemed unable to use his wings, although not a feather was injured. In about three weeks he could manage to get on the backs of the chairs. From this step in advance he got to the top of one of the doors when it stood open, where he was very fond of perching for a long time together, but was so perfectly tame that he would always allow himself to be lifted down. This quiet disposition, so unlike others of the same family which I had kept before, made him quite a pet. To mount on the top of

this door was the greatest effort at flight which he attempted to make during his sojourn at my dwelling. One fine afternoon, however, while he was quietly perching there as usual, and about five weeks after I had taken him in, he made a sudden dash at the window, knocked out two squares of glass, flew to the roof of a house on the opposite side of the street, sat on it, meditating, for a few minutes, then rose over the tops of some high elms, and after making three or four fine circles in the air, took a straight course northwards; and, although I immediately sent after him, and offered a reward for his apprehension, I never saw or heard of him again from that day forward.—C. FAULKNER, Deddington, March 6th., 1858.

Common Crossbill.—Last week five specimens of the Common Crossbill, (*Loxia curvirostra*.) were killed near the small town of Reeth, in this neighbourhood, by a farmer named Martin. These birds, forming part of a small flock, consisted of four males and a female.—HENRY SMURTHWAITE, Richmond, March 18th., 1858.

Early Occurrence of the Hobby, (*Falco subbuteo*.)—This little Peregrine in miniature, was brought to me, alive, on the 11th. of March, by a bird-catcher, who had taken it in his lark net. This handsome little Falcon is scarce in this neighbourhood; its habitat seems to be more among woods. The same day another bird-catcher brought me two of the Common Kestrel, which had darted at his decoy-birds, but, as in many other instances, the biter got bit.—T. THORNCROFT, Brighton, 15th. March, 1858.

A Vulpo-canine.—In the No. of "The Naturalist" for April, is an interesting account of a Canine Fox, which so nearly resembles an animal in my possession, that I send the following particulars:—A bitch whelp was sent me early last year by a gentleman in Kent, who stated that her mother was a cross between the Fox and the Dog. The whelp is now grown up, and about the size of a Fox, with the head and ears, and much of the appearance of that animal, but with the tail, though brushy, somewhat shorter. It is white, with large patches of greyish brown over the head and back; the coat smooth and hard, and not so full as that of a Fox; the ears sharp and erect, and the muzzle fine and pointed, with the forehead broad, and the head altogether very handsome. Its manners are exceedingly suspicious and shy, so that it will never play even with me, though I have been always accustomed to feed it, and it will dart into its kennel on the appearance of a stranger. For a long time I could not get it to follow me, as it would run back the moment it saw a person, and now it runs to and fro to avoid every one it meets, and generally attracts notice. One day it was much frightened by a number of persons in the

road, and started off at full speed, crossing a brook and several fields, and it was some time before I could catch it, or rather coax it to follow me back, as it will not let me touch it, but shifts away when I make the attempt, and I can only catch it in close quarters. It barks in a shrill, high tone, and appears very fierce when approached by a stranger in a yard in which it cannot get away, and is remarkably active and agile. The sire is a white terrier, and my Vulpo-canine produced two whelps, also by a white terrier, in January, one of which is living, of a white colour with foxy brown marks about the head. It is less shy than the mother, but seems much alarmed, running in a crouching or trailing attitude, at the barking of dogs. Its appearance too is very vulpine.—J. H. HEWER, Reading, April 20th., 1858.

Eggs of the Nuthatch.—In the April number of "The Naturalist," among the miscellaneous notices, a reference is made to an article of mine in the number of December last, on the Nuthatch, wherein I stated that the eggs were "like the Wryneck's, white." I beg at once to acknowledge this as an unpardonable and unaccountable error, and how I could have committed it I cannot conceive. There is no bird, perhaps, with which I am more familiar. The eggs vary a good deal, but are always more or less blotched with a brownish colour.—O. S. ROUND, April, 1858.

The Redstart.—On the 9th. inst., a male Redstart was shot at Caldý Island, Pembrokeshire, on the grass-plot in front of the proprietor's residence. As this is the first known instance of its occurring there, the fact may perhaps be considered worthy of being recorded. The Redstart is rare in Wales, but especially so in the western part of the Principality. It was formerly considered not to visit Wales. Yarrell says, "This bird also visits Wales *now*, and has been obtained once in Ireland, near Belfast." The proprietor of Caldý Island, who shot the specimen in question, had never seen the bird before, although he had lived in Wales upwards of half a century.—E. K. B., April 12th., 1858.

The Black Redstart, etc.—On the 25th. of last month, I had the good fortune to shoot a Black Redstart, in full summer plumage and excellent feather. Although I know it is contrary to the generally received opinion, I am inclined to think that it had but recently arrived here, as I found it in company with a small flight of Wheatears, the first I had seen for the year, all of which I know had but lately come over. I have seen many Cliff Chaffs, but have as yet not heard a sound of their song. I saw a Hooded Crow here a day or two since—a very rare occurrence in this neighbourhood. He appeared to be much buffeted by his black-coated brothers, into whose company he had thrust himself.—STEPHEN CLOGG, Looe, April 5th., 1858.

Occurrence of Falco peregrinus and Picus major near Fakenham.—A Great Spotted Woodpecker was shot at Raynham on the 4th. of March; and on the 23rd. of the same month a young male Peregrine Falcon was killed near the same place.—T. SOUTHWELL, Hempton, Fakenham, April 13th., 1858.

Proceedings of Societies.

Thirsk Natural History Society.—The monthly meeting of this Society was held on the evening of Wednesday, the 6th. of April. Mr. A. G. More, of Bembridge, was duly elected a member of the Botanical Exchange Club. Mr. J. G. Baker announced that the list of desiderated flowering plants and ferns for 1858, was in a forward state of preparation, and exhibited specimens of *Ranunculus dronctii* and *Arctium pubens*, gathered by Mr. Kirk, in Warwickshire. Mr. J. H. Davies exhibited specimens of several rare mosses from new stations.

East Kent Natural History Society.—We have been favoured with a report of the inaugural meeting of the East Kent Natural History Society, containing a most excellent address from Captain Cox. We regret exceedingly that we cannot give this *in extenso* to our readers, but, as it would occupy a couple of numbers of "The Naturalist," we must content ourselves with making extracts from time to time. It is seldom we have met with an address on Natural History at once so interesting and practically useful. The meeting seems to have been attended by all the principal inhabitants of Canterbury and its neighbourhood, the chair being taken by Major Munn, one of the Vice Presidents. A great number of specimens in Natural History were exhibited. The following are Captain Cox's opening remarks:—

"The aim of this Society is, to increase the love of Natural History, and diffuse its ennobling tastes through channels hitherto closed by prejudice, indifference, and ignorance; to collect and disseminate valuable information; to appoint throughout East Kent, local contributors, who will be requested to keep accurate notes of all points of interest bearing on the subject, and from time to time report them, as occasion may offer; to have stated meetings, at which papers will be read, and excursions carried out; and finally, to unite in one society, all those admirers of the beauties of Creation, whose kindred souls may there meet and become known to each other for their mutual improvement.

We will now inquire, first, into the advantages of the Society; and then, its objects.

The love of Natural History has, within the last few years, taken such rapid strides, that societies are being constantly formed; and the present is only a type of what is being carried out in other countries.

Formerly, the lovers of Natural History had many difficulties to contend with; their position was isolated, the postal communications imperfect and expensive, and the literature on this subject was very defective. Therefore, comparatively unknown to each other, the labourers in this delightful study pursued their researches under circumstances very different to those which the present extended state of knowledge presents to its votaries. Many kept diaries and notes, but having so little inducement to bring them before the public, doubtless, valuable papers have been lost to science; and many hearts, once ardent in the pursuit of some branch of Natural History, have carried to the grave their glowing enthusiasm, unheard of, and unknown.

But when a society is formed, *it* at once becomes the focus of individual enterprise. Members meet, friends join, and the hitherto solitary student is thus drawn from the seclusion of his study, to the position which his intellectual merit claims; and his collected knowledge is diffused through its transactions, and received into the scientific world, to be registered according to its deserts.

Another great advantage is collecting together objects of Natural History, so that, not only can the student have access to the archives, but also to preserved specimens.

A third, and most useful advantage, is the influence a body of scientific men must have upon their fellow-men. Their equals in education and family position, are gradually, by sympathy, led step by step into the pursuit, and, when once their tastes are indulged, there is little fear their hearts will again be mute to the whispering voice of nature.

But over our humbler fellow-creatures the influence is much stronger; they are invited to join, and to become associates, free of all expense. The natural feeling of pride, inherent in every bosom, awakens new sympathies—new sensations; first from an idle curiosity gazing on the various specimens collected together, his observations soon give a bias to his tastes and feelings, and his mind once enlisted, he seeks out the channel wherein to indulge his new pursuit. But before proceeding further, we must be thoroughly understood in thus strongly expressing the views of the society, that it by no means desires that the taste for Natural History should set on one side those moral duties and obligations which every member of our large community—however humble he may be—owes to society at large; but that it should be a constant source of the highest recreation, and also the means of filling up many a vacant hour, now devoted by the prosperous classes—may I say it?—to frivolous and puerile

occupation, or the still more effeminating influence of ennui; and by the humbler to the beer-shop, the gin-palace, and but too often, I fear, to other haunts of infamy and vice.

The educated class may seek recreation in reading; but the poor neglected artisan, how is he to spend the three or four hours left from labour, previous to retiring to rest?

The answer is but too readily found in the large increase of places of low resort and public amusement; and in their deteriorating precincts, what accumulation of evil threatens his moral and physical condition. But the spirit of inquiry is now on foot, and a brighter promise looms, I hope in the distance.

But to return to our subject. Among the divisions into which Natural History is divided, there are three which more especially are accessible to all—ornithology, entomology, and botany—the study of birds, the study of insects, and the study of plants. There is a rich vein opened at once, a banquet to which all are invited, a feast of which all may partake—satiating never—enduring ever.

Whilst in London a short time since, a friend asked me to take a ramble with him into the neighbourhood of Spitalfields, to see some of the collections made by the poor weavers. Gladly availing myself of his invitation, we started, and were soon traversing the narrow streets that lead to the humble dwellings of this poor, industrious, and hard-working class. Of several collectors, I will only mention one family as a type of the whole.

This family consisted of father, two sons, and a daughter. Their business at the loom was the weaving of white satin. On entering their little parlour, we found it quite neat, though crowded with objects of Natural History. The daughter followed the study of botany; the sons entomology; the father both. On Saturday afternoons, and especially by day-break on Sunday morning, this happy quartett would leave their home, and wend their way into the country, carrying provisions for the day's consumption. Here they would pass the hours, interrupted only by Divine Service, at which they always attended, inhaling the pure and invigorating air, whilst collecting their various treasures. Generally well-laden with various specimens of their studies, they returned home at night, with improved health and spirits, and with minds well content to fulfil the duties allotted to them.

During the week, after work, their evenings were employed in arranging their various collections; and amongst many which they showed us, I was particularly pleased with a book of dried plants, arranged and collected by the daughter, which in neatness might rival those of any wealthy collector. Comment upon such a family would be superfluous; they were honest, in-

dustrious, hard-working people. And that which you have just heard respecting Spitalfields, is also true as regards Manchester, Birmingham, and many other large manufacturing towns. These exhausting dens of human sinew are now lifting the veil that so blindly doomed the poor factory child to a life worse than slavery. The leading men begin to appreciate that more gain is to be extracted from healthy life, than from diseased and waning strength.

Sanitary and salutary laws have been passed by the legislature; and even now, with almost over-taxed exertion, many, directly after factory hours, avail themselves of the charms of entomology to pass their few leisure hours. And it is a remarkable circumstance that some of our most practical entomologists are to be found among this class.

With such deeply interesting facts before us, is it not a commendable zeal, to endeavour to win from low and dissolute pleasures, minds, capable when taught by their persevering energy, to be the instructors of others."

(To be continued.)

The Retrospect.

The Great Snipe, (*Scolopax major*.)—The Great or Solitary Snipe is not so great a rarity in this neighbourhood as Mr. Round seems to infer. I know of at least a dozen specimens that have been shot in this neighbourhood. I have one in my collection.—The VEN. ARCHDEACON GLOVER, in a letter to Mr. Bree.

The Querist.

The difference in sound of the cawing of Rooks.—The Editor of "The Naturalist" has inquired of his country friends,—“Whether they do not agree with him, that the sound of the cawing of the Rook, in September and October, has quite a different sound from the notes of the same birds in the winter and spring months?” I quite agree with him in this opinion, and my own observations during the September and October of the last year, the winter which has followed, and the spring, now so happily begun, confirms in my mind the truth of the proposition. During the former period the Rooks were in great numbers over the fields, and the exceeding fineness of the weather was a great inducement to visit them, which I was in the habit of doing almost daily. The Rooks were to be seen feeding upon the earthworms, etc., of which at that season there is a plentiful supply; in close companionship with them were Jackdaws and Starlings. It was curious to watch the motions of the various species; although feeding

together in perfect harmony, their movements were strikingly peculiar to each. The Jackdaws, indifferent to feeding, were strutting about, and appeared to feel gratified with being in the society of their more dignified companions; the Starlings were restless, and continually starting off in flocks.

Whilst the proceedings of the Rooks seemed to be regulated with order and system, their cawings were significant of a good understanding, and the musical tones mentioned by the Editor of "The Naturalist," no one could fail to distinguish.

The Rooks are now busily employed in repairing their old and building new nests; and having a great disposition to rob each other of materials for the purpose, rather than fetch them from a distance, fierce disputes arise, hence the harsh angry sounds and jarring notes, so different from the mellow tones of the same birds in September and October. Who can be so indifferent to the pleasures attending the study of Natural History, as to pass a Rookery at this busy season, without pausing to watch the exciting scene going on, and observing with interest the indefatigable industry and perseverance of these useful birds. They appear to go off in detachments for the purpose of feeding, as few are now to be seen at one time in the fields: the meadows where cattle are pasturing seem to be the most frequented. The droppings of the cattle, which would otherwise remain undisturbed, generating larvæ and insects destructive to vegetation, are all turned over, and every thing injurious extracted; all other manures deposited on the ground undergo the same scrutiny. While thus employed they are remarkably silent; perhaps their powers for cawing have been somewhat over-exerted in their building disputes, and are now reserved, to be used with greater effect upon returning to the works. It is evident no time is lost in feeding, when moving from one spot to another. They fly as near as possible to the ground, for better discovering what might be below the herbage, and their keen sight enables them to detect grubs, etc., even if buried in the ground. As already observed, no cawings are heard, they are pursuing one object and need no converse; they will speedily return to the Rookery, and take the places of another detachment, who, in their turn, will fly off to the fields in search of nutriment.

There are numerous Rookeries in this neighbourhood, one of which appears to me to possess some distinguishing features, inasmuch as the Rooks do not gather in one, or a few large congregations, as I have observed to be their habits at other Rookeries, but in this instance divide into smaller colonies, and build upon the numerous lofty trees in various parts of the domain. This assemblage of Rookeries in view of the mansion has a pleasing effect, particularly when seen from the upper windows, which, aided by the elevated situation of the house, affords excellent opportunity for examining the nests of the birds, and observing their movements; an advantage the

kind hospitality of the owner has enabled me to enjoy. Upon my last visit, a few days back, he told me the Rooks were unusually late this year in commencing their building operations; a circumstance easily accounted for, by the severity of the weather at the beginning of this month. He also informed me that these birds in pairing, display marked affection and constancy; and if by mischance or otherwise one of a couple should be destroyed, the survivor does not seek another mate, but remains in single blessedness. The readers of "The Naturalist" will form their own opinion upon the truth of this statement. I only repeat what my friend has said, and he has excellent opportunities and leisure for investigation.

It is not intended in this communication to enter upon a history of Rooks, or a description of their manifold services to agriculture; these subjects have been fully and extensively treated by learned and competent writers. And the usefulness of these birds at all seasons of the year are so generally known and appreciated, as to render the attempt intrusive, and from an individual so unlearned as myself, simply a piece of vanity. I have therefore only noticed the particular acts of usefulness which came under my own observations in connection with, and illustrative of, the matter in reply to the query of "The Naturalist."—THOMAS FULLER, Weston Road, Bath, March 25th., 1858.

I should be glad if any of the readers of "The Naturalist" could inform me whether there is any book published on the subject of trapping and snaring wild animals and vermin, with instructions in the art.—B.

A cockney reader would also be glad to know the best modes of distinguishing the old from the young in the choosing of game and poultry.—Idem.

Will some of the fen correspondents of "The Naturalist" kindly furnish a list of the species of trees dug up in the fens of Lincoln, Hants, and Cambridge?—W. WALDO COOPER, West Rasen Rectory, March 6th., 1858.

Exchange.

THE undersigned has duplicates of the Eggs of the following Birds, and would be glad to exchange:—Sedge Warbler, Blackcap, Garden Warbler, Whitethroat, Lesser Whitethroat, Wood Wren, Willow Wren, Great Titmouse, Long-tailed Titmouse, Grey Wagtail, Meadow Pipit, Skylark, Wood Lark, Black-headed Bunting, Jackdaw, Sand Martin, Wren, Swallow, Pheasant, Sparrow Hawk, (would like to change for those of the Kestrel,) Spotted Flycatcher, Redstart, Corn-crake, Water-hen, Partridge, and Peewit.—FRANK NICHOLSON, Bowdon, May 5th., 1858.

NATURAL HISTORY OF SUNNINGHILL.

BY O. S. ROUND, ESQ.

(Continued from page 127.)

CHAPTER III.

HAVING thus given a general description of the disposition and character of the inhabited portion of this district, it is next necessary to consider the various kinds of soil of which it is composed. The predominant feature of the superficies is not, it must be admitted, very productive, being in general a light sand, in some parts a mere drift sand, composed precisely of the same particles as that found on the sea-shore, or in the digging of wells when water is found; and this, more abundantly still, proves the submersion of the whole surrounding country at some distant period. Where this soil has been trenched, or deeply dug, and the rain has again washed it, crystals, in some instances as big as small peas, are brought to the surface; these are white and clear, extremely hard, and when polished and cut, set well, and pass off as ornaments much better than paste, being, in fact, so hard, that the true diamond dust is used by lapidaries to cut them. These are provincially called "Bagshot diamonds," from their being found on the heath which extends to and around the small town of Bagshot, in Surrey, three miles distant to the south-west. I have in my possession a ring made of these stones, which have been taken, by good judges, for rose diamonds.

A very few years back the whole of this country, as far as the eye could reach, was one sterile region of heath and furze, mingled occasionally with a patch or strip of sedge or rushes, whether the soil either inclined to clay or marsh: one dreary region of moorland unintersected by a single road, save the sheepwalks of a few flocks that roamed at will over its expanse; or sprinkled by a single tree, save here and there a thorn or whin bush, those indigenous tenants of the waste, that stand for centuries in their gnarled and stunted hardihood, unaffected by the tempests of heaven or the weight of years, which bow down and mingle with the dust so many much mightier works of nature. Surely the whin, or wild-thorn is the hardiest and longest-lived thing upon the face of the earth; there are many which I could now point out, that have not grown or changed from shoots even into bushes for twenty years! They were anciently looked upon with a mysterious awe, and thought to be the peculiar resort of evil spirits.

"With blanching lip, and cheek with terror pale,
The startled peasant trembles at the tale.
Now at chill midnight, by the moon's pale glance,
Uncertainly forms prolong the viewless dance;
And in each wandering breeze that murmurs by,
His busy fancy hears the hollow sigh."—T. S. SALMON.

Thus there was a very old tree of this kind, that stood on the hill about a mile to the west of Ascot Heath, and known as the "hag-thorn." The hill was purchased about the year 1820-21 by a captain of horse-guards, who laid it out in farm and pleasure-grounds, and built a genteel residence near the spot. The old tree was for some time suffered to form part of the garden hedge, but was afterwards cut off near the ground. The old stump was, however, not so easily killed, for it soon afterwards sprouted, and a very considerable bush, grown from the remnant, was to be seen a very few years ago, if it does not still remain, and in the county map, drawn from a survey taken soon after, the spot will be found thus designated. The place where this thorn grew forms the western side of the vast basin, which, as I have said, this part of the county presents. The ridge runs from this to another point, called Tower-hill, from the remains of a building to be seen some years since, and said to have been erected by Henry the Eighth when Swinley Chase, which is about half a mile from it, was used as a royal hunting-lodge. This is not improbable, as the hill itself commands a most extensive prospect in every direction, looking into the counties of Surrey, Sussex, Hants., Bucks., Wilts., and Middlesex, and as the lodge which stood at Swinley, was in the occupation of a Royal Forester, until it was pulled down about the year 1825. The summit of this eminence is covered with a group of (I think) five thorn trees, which are resorted to at Christmas times, for the purpose of gathering mistletoe, which grows abundantly on their rugged trunks. Time has done its work since the time that I first remember this locality, and instead of the free views of brown or purple heather, upon which the eye could then wander freely, you now look upon a sea of green firs, which run for miles on three sides, and indeed clothe the sides of Tower-hill itself, so that, whereas it was a point to be seen for miles, you cannot now distinguish it from the rest of the green ridge. Courts Leat were holden at Swinley, of the manor of East Hampstead, and many curious documents existed among the ancient rolls, not the least of which was a tradition of "Herne the Hunter," whose oak, or that which is said to be, is well known to stand in the little park at Windsor, on the lower side of the castle. This story was put into rhyme by my grandfather, Mr. Stephen Round, of New Windsor, then steward of the manor, and consequently having free access to these old records, I therefore shall insert this without further preface, except to take notice of a discrepancy in point of date. In Shakspeare's "Merry Wives," written somewhere about the end of the sixteenth century, the legend of Herne is thus spoken of:—

Mrs. Page.—"There is an old tale goes, that Herne the hunter,
Sometime a keeper here in Windsor Forest,
Doth all the winter time, at still midnight,

Walk round about an oak with great ragged horns;
 And there he blasts the tree, and takes the cattle,
 And makes milch kine yield blood; and shakes a chain
 In a most hideous and dreadful manner.
 You have heard of such a spirit, and well you know,
 The superstitious, idle-headed, ,
 Received, and did deliver to our age,
 This tale of Herne the hunter, for a truth."

Now this was purported to be spoken in the time of Henry the Fourth, and was written by a person who probably well knew that the legend was as old as that at all events; but in the ballad which follows, it will be seen that Henry the Eighth is the king spoken of. Whether this is a real anachronism, or a mistake in the number of the king, I do not know, but give the ballad as in the original.

HERNE, THE MIGHTY HUNTER.

A FOREST BALLAD OF THE SIXTEENTH CENTURY.

HARRY the Eighth, a noble prince,
 Sat on the English throne,
 And had a pleasant hunting-seat,
 By name of Swinley, known.

Near Tower-hill the mansion stood,
 With lofty oaks around;
 Within the park, the chase, and wood,
 The noble deer abound.

Venison was what the king preferred,
 Oft sent his warrants down,
 To kill the fattest of the herd,
 And send them up to town.

To disobey the royal will
 Was little less than treason,
 His stern command they must fulfil,
 Through all the summer season.

At Swinley dwelt a yeoman bold,
 Will Herne, the mighty hunter,
 In scarlet clad, and laced with gold:
 In speech no man was blunter.

No lord or duke dared cheer a hound,
 For fear of him in red;
 But to the king, unto the ground
 Herne bent his haughty head.

He'd shot a stag, for miles and miles
 Where hounds in vain had sought,
 And never stopped for gates or styles,
 Or e'er of danger thought.

Full sixteen hands his courser stood,
 No better in the field;
 And as to speed, and bone, and blood,
 To none would ever yield.

To church or chapel he ne'er went,
 Would rather curse than pray;
 Nor flesh refused in holy Lent,
 Nor kept the sabbath-day.

King's warrants came on Sunday morn,
 Six bucks to take and slay;
 Herne took his horse, his gun, and horn,
 And hasted far away.

Then took his stand beneath a thorn,
 And blew a mighty blast;
 Swift at the sound of his shrill horn
 Six keepers galloped fast.

All dressed in green, and mounted well,
 With rifles at their side;
 "Why sound your horn, we pray thee tell?"
 Each keeper loudly cried.

"I sound the horn," he roughly said,
 "That you might present be,
 And of the herd to shoot six head,
 Under the greenwood tree."

The keepers, in reply, demurred,
 Because 't was Sabbath-day,
 And that the work might be deferred
 They earnestly did pray.

Herne then into a passion flew,
 And swore he'd represent
 The treason of the dastard crew,
 Unless with him they went.

Religious faith to fear gave way;
 In vain the bells did chime,
 And chiming loud, did seem to say—
 "To church, 't is now the time!"

Under the brow of King's Beech Hill
 An herd of bucks did lair;
 The sun was high, the wind was still,
 The weather warm and fair.

From Broomhall's convent came a priest,
 And down the hill did ride;
 His age was threescore years at least,
 A mule he did bestride.

With tonsured head, his beads, and hood,
 To church his course he bent;
 To pray and preach with precepts good,
 Was this sage man's intent.

The huntsman and his men in green,
 The priest astonished spies,
 A sight he ne'er before had seen,
 And scarce believed his eyes.

"Vain men," he cried, "can ye profane
 This day for rest assigned,
 For holy church shew such disdain,
 And disrespectful mind?"

"Think what will be your future fate,
 When ye resign your breath:
 Repentance then will come too late
 To ease the pangs of death."

"Now to and fro the devil prowls,
 And hears each passing bell,
 And hunting for such graceless souls,
 To burn in flames of hell."

"Oh, father," cried the huntsman Herne,
 "Your duty now pursue,
 And then permit us in our turn,
 To yield obedience too."

"To you I shall no farther say,
 I fear no monkish spell;
 My master's warrants I'll obey
 In spite of priest or knell."

There are many allusions to places in the course of this ballad, of which I shall speak more particularly at a subsequent period of this history; suffice it to say in this place that the Inn here spoken of had its sign changed about the time of the pulling down of the old lodge at Swinley, and has ever since borne that of the "Royal Forester," a general appellation, which, although it rendered it less particular, did not alter the actual sense. A neat residence close by was also known by the same name, and this, creating some confusion, was, I believe, the true reason for the alteration. If any more faith can be placed in this than the other legends which have obtained concerning this man, it would seem that the heathy plain in this neighbourhood was the scene of his irreverent

They parley thus, the deer stand still,
 And listening seem'd to be,
 To learn the haughty hunter's will,
 And wait their destiny.

Scarce had these words escaped his mouth,
 When one came bounding by;
 His haunches fat, of largest growth,
 His antlers broad and high.

As thus the deer affrighted ran,
 Herne aimed his gun—in vain!
 For merely flashing in the pan,
 'Twas aimed and fired again.

The gun, so foul and elugged with rust,
 Neglected long had lain;
 With loud report the barrel burst,
 And pierced the yeoman's brain.

Thus Herne the mighty hunter died,
 Contemning laws divine;
 And as he died, blasphemed and cried—
 "Curs'd be this gun of mine!"

Still as the year comes duly round,
 Herne, from the infernal crew,
 Is suffered with his horn and hound,
 His pleasure to pursue.

A midnight ghost, he's seen to ride
 On Bagshot's gloomy plain;
 His voice is shrill, the pack, his guide,
 Then disappears again."

To prove the facts which I relate,
 And all the forest know,
 You'll find the truth of what I state,
 If you to Swinley go.

There, "Martin's Herne," a house hard by,
 Tom Martin kept for years;
 And on a sign-post, mounted high,
 Herne's picture still appears.

exploits; for so far as the adventure which forfeited his life is here related, it has nothing remarkably improbable in it. But to return to the features of this wild country, which I shall refer to another chapter.

(To be continued.)

THE RURAL DISTRICTS OF BATH.

BY THOMAS FULLER, ESQ.

WEST of Bath is the busy village of Weston, remarkable for the abundance of laundresses and of schools, occupations and establishments in great request near large towns. The parish of Weston embraces a large portion of the rich valley west of Bath, having on its southern boundary the river Avon, and on its northern the high hill of Lansdown, part of which down is included in the parish. The whole of the country between ascends gradually from the banks of the Avon, in pleasing undulations, until the steeper rises towards Lansdown are approached; progress then becomes laborious, but the difficulties encountered are amply rewarded by the varied and charming views which meet the traveller at every turn, and having attained the summit of the hill, all sensation of fatigue is entirely dissipated in breathing the pure invigorating atmosphere of this high elevation; and in treading the soft level turf of this beautiful down the pedestrian cannot but be impressed with the happiest feelings, and fully appreciate the rich treat before him, in the boundless prospects not to be surpassed, if equalled, in England. When his wonder and astonishment has somewhat subsided, he will be able to distinguish at a little to the south-east, almost under his feet, the city of Bath, with its unrivalled crescents and other buildings. To the south-west at a greater distance is the large commercial city of Bristol, enveloped in the dark atmosphere of smoke issuing from the chimneys of its numerous furnaces and manufactories. Through the rich vale between these two cities, the River Avon pursues its winding course. Further off to the west the lofty hills in Monmouthshire are seen, with the noble River Severn, as it flows to the broad estuary of 'King's Road,' where, joined by the Avon, and increasing in width, assumes the name of "Bristol Channel." To the south are the Mendips and other high hills in Somersetshire, with Alfred's Tower near Stourton, and objects innumerable worthy of attention. If more is required the observer has only to turn in a northward direction, and a short walk brings him to a commanding view of the Cotswold Hills and the rich vale of Gloucestershire. A few steps further would take us into that county, but having no intention of going so far on this occasion, we will retrace our steps towards Weston, and descend the hill by the shortest paths through the fields to

the village, which is situated nearly in the centre of the parish, midway between the River Avon and Lansdown Hill, and about two miles from Bath, with which city it is connected by a good road. Numerous springs of water rise from the sides of Lansdown Hill, and uniting in their approach towards the village, form a considerable stream, which runs through the long street of the village, and taking afterwards a south-easterly direction, joins the River Avon.

On the north side of the village street stands the church, a building of much interest, which, although not in our province to describe, ought not to be passed by without observing, that notwithstanding an addition to the building, the church is still insufficient for the wants of the parishioners, many of whom from deficiency of accommodation are deprived the means of attending the ministry of the present excellent Vicar. If ever an instance existed of all the Christian virtues being united in one individual, that happy combination is to be found in the person of the amiable and highly-esteemed gentleman who now conducts with so much harmony and satisfaction the manifold responsible duties of his holy office.

The prevailing taste for suburban residences has created a great demand for houses outside of towns, and has caused the erection of ornamental villas and cottages to extend on every side, so as to unite with the villages adjoining. The union of Bath with Weston would long since under the influence of this popular feeling have been consummated, but happily for the inhabitants of Bath, and the admirers of Nature in particular, the beautiful meadows, known as the "Bath Common Fields," interpose, over which, thanks to the wise and benevolent provisions of our ancestors, no houses can be built. To the inhabitants of Bath is thus preserved a delightful space for recreation, the attractions of which have been much increased by a tasteful arrangement of shady promenades and agreeable drives; and from its proximity to the city, and its easy and gentle ascent, with the extensive and richly diversified prospects of the surrounding country, no spot can be more admirably adapted for the objects intended. The cost of these improvements was provided by subscription, and they were executed with great taste in 1830. On the 21st. of October in that year, the Duchess of Kent, accompanied by her illustrious and interesting daughter, the heiress presumptive to the Throne, arrived in Bath. The occasion of this visit was deemed an auspicious epoch for opening the new improvements, and a request was made to Her Royal Highness that she would be pleased, on her inspection of the different public buildings, etc., to make *the first circuit* of those improvements. Accordingly on the 23rd., the Royal visitors, attended by the Mayor, the Lord Bishop of the Diocese, and several other distinguished characters, with a numerous train of followers, entered at the principal approach from Bath, and after taking the circuit of the drive,

Her Royal Highness expressed the gratification which herself and the Princess had derived from their visit to the city, and signified her desire that in future the newly-formed pleasure grounds should be designated "The Royal Victoria Park."

The management of this valuable appendage to Bath is delegated to a committee of gentlemen and tradesmen, who are indefatigable in their care and attention. Protection to the feathered creation is not lost sight of, but notwithstanding the strict surveillance of the Park keepers, rude mischievous boys carry on their depredations, and manage to elude detection. Still in the abundance of trees and thick foliage of the evergreens, many of our native songsters who remain with us through the year find shelter, and during the late mild winter the notes of the Thrush were continually heard. But the Naturalist looks for more retired places; so let us leave the Victoria Park to fashionable loungers and pleasure-seekers, and proceed to the parish of Weston. We soon meet the stream of water, which, after leaving the village, flows through a rich dell, and passing under a bridge of one arch, over which is the turnpike road from Bath to Bristol, joins the River Avon, where it is known by the name of "Lock's Brook."

The windings of this dell to the junction of the brook with the river is to me a favourite resort. Here I have noticed the first appearance of the Swallows, and here also have I observed, but with very different feelings, preparations for the departure of these pleasing companions of our summer rambles. An instance of the latter came under my notice last October; the weather up to that time had been warm for the season, but on that day the chilliness of autumn was sensibly felt, and the leaves of the willows overhanging the river and the brook, dropped in great numbers, and the rapid approach of the shades of evening painfully impressed upon my mind the fact that the sun had left our northern hemisphere, and was journeying south.

Whilst thus musing upon the pleasures of the happy season just passed, and looking forward to the approaching trials of stern winter, my attention was attracted by the great number of Martins, as they flitted over the river with more than usual animation and chirrupings. "Ah!" thought I, "you happy beings will all very soon be following the glorious luminary into more southern climes, and all this bustle and chattering looks like preparation for the movement." Feeling much interest in the busy scene before me, I lingered upon the banks of the river watching the motions of the birds, remarking their gradual disappearance, and pondering in my mind as to where they could be disposing themselves. Occupied with these thoughts, and looking towards the brook, the trees which overhung the stream seemed to have undergone a complete change, every branch being covered with white spots. No rays of light were visible from any quarter

to account for this singular appearance; on the contrary, mist was rising from the river and darkness increasing. Being much puzzled, and seeing a countryman approaching, I drew his attention to the trees, and inquired if he knew the cause of the singular whiteness of all the branches. "Oh yes," said he, "that is from the Martins; all those spots we see are their white breasts as they perch upon the branches. They have enticed all their young ones from their nests, and have been teaching and exercising them upon the wing; they will return no more to their nests, and are now settled for the night in a body, so as to be ready for flight in the morning, and will all be off at early dawn." Nearer examination confirmed the truth of this statement; these white spots which had so perplexed me were indeed the breasts of these aerial travellers. Upon asking if he had ever witnessed a similar occurrence, "Oh yes," said he, "in a withy bed lower down the river, I have seen them gather together in the same manner."

Having noticed the statement of a correspondent in "The Times," "that he had seen a small flock of Swallows on the 30th. of March, near Dorchester," I was induced to watch for their return here more narrowly than usual, and on the 11th. of April saw them for the first time. There had been a sharp frost the night before, but the sun rose with majestic brilliancy in a clear, blue, cloudless sky, the genial warmth of his rays gave evidence of his being in our northern hemisphere. Myriads of gnats and other insects were on the wing, and a more beautiful day in April was never seen. It was Sunday, and immediately after leaving church, I proceeded to the dell spoken of, and never do I remember the glory and loveliness of the handiworks of Divine Providence opening with greater attractions.

As I stood on the bank of the brook lost in feelings of deep reverence and admiration, a Martin caught my eye; following the course of the stream I saw more, and upon arriving at the junction of the brook with the river, had the happiness of seeing our welcome visitors in great numbers, skimming and dipping the water, and wheeling in the air with all their characteristic rapidity of flight and quickness of evolution. The contemplation of so busy a scene of animated nature was delightful, and induced me to remain until near sun-set. Gilbert White says, "That during forty years attentive observation, he never saw them before the 13th. of April." The fact of having seen them before so close an observer and eminent authority would have been worthy of record, but for the announcement of the "Dorchester Naturalist."

The road from Bath to Weston is a favourite drive; beyond the village a steep lane leads to Lansdown. Other lanes branch off to villages adjoining, and numerous tracks and footpaths intersect the fields, leading to

farm-houses in different parts of the parish. These lanes and paths afford shady and agreeable walks to the pedestrian; but the contiguity of this naturally beautiful district to so large a town as Bath, tempts great numbers of city sportsmen throughout the winter season, who make sad havoc with the feathered creation. The few which escape, are, however, sufficient to add interest to the rambles which may be pursued in every direction, from the banks of the Avon on the south to the top of Lansdown on the north, and from east to west. The admirer of nature finds many attractions even at this rough time of the year, and looks forward with pleasing anticipations for the approaching spring. But with this genial season, to his great disgust and annoyance, comes another class of persecutors, in the persons of mischievous boys, who scan the fields, scrutinizing every hedge and tree in pursuit of birds' nests, so that in every walk one or more of the idle vagabonds is met with eggs strung upon a primrose stalk. These doings leave little encouragement to the naturalist; nevertheless the healthy freshness of the country air and its invigorating influence, fortify the mind, and dispose the lover of nature to make the best of such adverse circumstances.

The farms distributed over this extensive parish are in small holdings, being chiefly pasture lands, supporting dairies of cows, which supply a large proportion of the milk consumed in Bath. I take every opportunity of endeavouring to create among the farmers some feeling in favour of the feathered creation, but they are wholly indifferent upon the subject. Talking with one of these gentry a few days back, whose farm joins a mansion called Weston House, on one side of which is a shrubbery, where birds might be expected to congregate, "How is it," I inquired, "that so few birds are to be seen in this favourable situation?" In reply he repeated the same causes I have already noticed, adding, that formerly there existed a rookery upon the high trees near the house, but the ladies who then occupied the mansion caused the rooks to be destroyed. Thus it is that a beautiful rural district has been denuded of one of the greatest attractions the country can possess.

Bath, April, 1858.

Entomology.

A LIST OF THE INSECTS OBSERVED IN THE SOUTHERN PART OF THE COUNTY OF SUSSEX.

BY W. C. UNWIN, LEWES.

No IV.—INCLUDING THE LEPTIDÆ, BOMBYLIDÆ, SCENOPINUS, EMPIDÆ,
DOLICHOPIDÆ, LONCHOPTERIDÆ, CONOPIDÆ, AND MUSCIDÆ.

(Continued from page 93.)

LEPTIDÆ.—WESTWOOD.

Leptis scolopacea.—Not common. On the banks by the Winterbourn stream, in June.

L. trigaria.—It has been observed, but rarely, in the neighbourhood of both Lewes and Brighton.

L. lineola.—This species is by no means common, although frequently observed in this locality in June and July.

Chrysopila holosericea.—Frequently obtained by sweeping the flowery banks in the Lewes levels, in July and August.

BOMBYLIDÆ.—WALKER.

Thereva plebeia.—By the sides of corn-fields, on thistles and other *compositæ*, in July and August.

T. annulata.—Rare. Near the coast at Newhaven in July.

Bombylius major.—Common in the Plashet and Warringore Woods, and also in Compton Wood, near Firle, frequenting the sunny glades in these localities on bright spring days, appearing in some years as early as March, but usually in April and May. Its habit of hovering in the air reminds us of the interesting Humming Bird Hawk Moth, (*Macroglossa stellatarum*.) so frequently noticed in gardens in August.

B. medius.—In plenty on the first fine warm days of April, in the same localities as the last species, but seems to prefer the sunny banks of the skirts of woods. It is commonly called the Unicorn Fly and Sword Bee, from its long proboscis.

SCENOPINUS.—CURTIS.

Scenopinus fenestralis.—Of frequent occurrence in early spring.

EMPIDÆ.—LEACH.

Empis tessellata.—Plentiful, basking on the leaves of trees and shrubs in July; commonly in moist situations near Langport and Kingstone, near Lewes.

E. livida.—Not rare. Generally obtained by sweeping the long grass on hedge banks in the neighbourhood in July.

E. femorata.—Common. On *Umbellifera*, and by sweeping.

Hilara quadrivittata.—Very common. Hovering and sporting at the close of day over running streams in little parties in May and June.

Rhamphomyia sulcata.—Not uncommon among the grass by the sides of

ditches during the summer months, and on the leaves of aquatic plants, also on the blossom of the Meadow-sweet.

DOLICHOPIDÆ.—LEACH.

Dolichopus nobilitatus.—Very abundant on aquatic plants in the ditches in the Lewes levels in July.

Chrysotus viridulus.—Rare. Taken near Firle.

LONCHOPTERIDÆ.—CURTIS.

Lonchoptera punctum.—This little species is found very plentifully by sweeping the ditches from March throughout the summer.

CONOPIDÆ.

Conops quadrifasciata.—Not uncommon in the Plashet and Warringore Woods in August, on the flowers of the Common Ragwort, (*Senecio Jacobæa*.)

C. rufipes.—Frequents the same localities as the last, but more rarely observed.

MUSCIDÆ.—LATREILLE. DIVISION CALYPTERÆ.—MEIGEN.

Bucentes geniculatus.—Not common. Occasionally observed basking on palings in the sun in April and May.

Tachina grossa.—On the trunks of trees in the spring, but not common.

T. ferox.—Frequents the sides of corn-fields near the Downs, in June and July.

T. ursina.—Of frequent occurrence on *Umbelliferae* by the sides of corn-fields, near the Downs, in June.

T. lateralis.—Very common on the blossom of the Cow Parsnip, (*Heracleum sphondylium*.) on hedge banks, in June.

Sarcophaga carnaria.—Abundant everywhere. Very variable in size. Its usual habit is to settle before you in pathways, either on the ground or on a stone, in the hottest sunshine; appearing from April to October. It is one of the species which may be seen frequenting the ivy blossoms.

Musca vomitoria.—Very common everywhere.

M. Caesar.—Abundant on *Umbelliferae*, etc.

M. domestica.—Most abundant, and particularly in the month of August

M. rudis.—Frequents the windows of houses in early spring, and on walls facing the sun. Very common.

M. corvina.—Observed at Firle by a young friend from whom I have two specimens; he speaks of it as not being uncommon.

M. maculata.—Not rare near Lewes. A distinctly-marked species; it frequents walls and palings facing the sun.

Tetanocera dorsalis.—Occurs occasionally, and principally obtained by sweeping.

T. lineata.—One of the species which is the produce of the sweeping-net; but it is not common.

Borborus equinus.—Frequents the willow-blossoms in March and April.

Limosina limosa.—Most commonly observed in the windows of out-houses, also on walls near drains and gutters early in the spring.

Platystoma seminationis.—Not uncommon on the leaves of the Burdock,

(*Arctium lappa*.) by the foot-path leading to Ilford, in 1855, and has also been taken near Brighton. It does not appear to be very generally distributed, more particularly in the North of England.

Ortalis vibrans.—Occurs very commonly along hedge banks in July and August.

Trypeta arctii.—Not uncommon, and usually found on the blossoms of the Knapweed, (*Centaurea nigra*.) in July and August.

Sepsis cynipsea.—Abundant on the leaves of plants, and more particularly on those of the Strawberry in gardens. Appearing in May and June.

Chlorops circumdata.—In plenty in May and June near Landport and elsewhere, flying among, and settling on the leaves of bushes in the sunshine.

(To be continued.)

A LIST OF THE RARER SPECIES OF COLEOPTERA, WHICH OCCUR, OR HAVE BEEN TAKEN IN THE NEIGHBOURHOOD OF HARLESTON, NORFOLK.

BY J. LEEDES FOX, ESQ.

AND IN THE NEIGHBOURHOOD OF BUNGAY.

BY W. GARNES, ESQ.

[When no initial is affixed the insect has been recorded by each of the above gentlemen. The initials F and G respectively intimate that it has been observed only by the person to whom the said initial refers.]

(Continued from page 89.)

Grypidius equisiti.—Rare. (G.)

Dorytomus vorax.—Not uncommon at Bedingsfield. (G.)

Lixus paraplecticus.—Once, by my father. (G.)

Magdalis cerasi.—Rare. (G.)

Rhynchites œneovirens.—Rare. (G.)

Monochamus sutor. Once. (G.)

Orchestes caprea.—This pretty little insect occurs frequently. (F.)

Balaninus villosus.—Occasionally in Gawdy Wood. (F.)

Leiosoma ovatula.—Sometimes in plenty. (F.)

Tanysphyrus Lemnæ.—Occasionally. (F.)

Oxytoma fuscirostris.—Rather scarce. (F.)

Aromia moschata.—Sometimes plentifully. (F.)

Pogonocherus hispidus.—Occasionally.

Saperda cylindrica.—I have taken two specimens near this town. (F.)

Leiopus nebulosa.—Occasionally. (G.)

Mesosa nubila.—Very rarely. (G.)

Saperda populnea.—Occasionally. (G.)

Tetrops præusta.—Occasionally.

Gracilia minuta.—Sometimes abundant. (F.)

Pachyta livida.—Common. (F.)

- Callidium violaceum*.—Once. (G.)
C. variabile.—Occasionally. (G.)
C. alni.—Occasionally. (G.)
Donacia menyanthidis.—Very rare. (G.)
D. cincta.—Frequent. (F.)
D. dentata.—Occasionally. (F.)
D. dentipes.—Occasionally. (F.)
D. sagittariae.—Scarce. (F.)
D. rustica.—Plentifully. (F.)
D. Typhae.—Plentifully. (F.)
D. Hydrocharidis.—Occasionally. (F.)
Crioceris puncticollis.—Plentifully in the autumn. (F.)
Cassida Murræa.—Sometimes abundantly. (F.)
C. obsoleta.—Occasionally. (F.)
C. vibex.—Occasionally.
C. sanguinolenta.—Once. (G.)
C. viridula.—Once. (G.)
Macrocnema nigricollis.—Occasionally at Beddingfield. (G.)
Anchenia 4-maculata.—Occasionally. (F.)
Thyamis 4-punctulata.—Very rare. (F.)
Chatochnema aridula.—Frequent. (F.)
Chrysomela distinguenda.—Occasionally. (F.)
C. Gættingensis.—Scarce. (F.)
Cryptocephalus lineola.—Once. (G.)
Coccinella 14-guttata.—Occasionally.
C. 16-guttata.—Rarely.
C. ocellata.—Scarce. (G.) Only two specimens. (F.)
C. oblongo-guttata.—Rarely. (G.)
C. 13-punctata.—Rarely. (G.)
C. 19-punctata.—Rarely. (G.)
Endomychus coccineus.—Mr. Muskett has taken several examples in this district, but I have never met with it. (F.)
Platydemus aenea.—Scarce. (F.)
Ctenopus sulphurea.—Occasionally. (F.)
Orchesia micans.—Frequent. (F.)
Mordella aculeata.—Rare. (F.)
M. primula.—Once. (G.)
Melandrya caraboides.—Occasionally. (G.)
Oncomera femorata.—Once. (G.)
Notoxus monoceros.—Occasionally. (G.)
Ripiphorus paradoxus.—Mr. Muskett has taken numbers of these insects from wasps' nests in this neighbourhood. (F.)
 [It is common in the neighbourhood of Stowmarket, in wasps' nests.—ED.]
Anthicus antherinus.—Occasionally.

(To be continued.)

THE PSYCHIDÆ.

THE remarkable work of M. Siebold, upon "A True Parthenogenesis in Moths and Bees," which was during the year 1856, translated by Mr. Dallas, has no doubt been read by most naturalists in this as well as other countries. It would be idle to attempt to cast any doubt upon the startling facts contained in M. Siebold's work, at all events in the present state of the question. M. Siebold is one of the best observers in modern days; and this is saying much. We are not at present aware that his views have been called into question, or his facts doubted by any person of authority. That the subject is still incomplete, and that it offers a very wide field for further observation, (we would fain have added further confirmation,) M. Siebold himself admits.*

It may be interesting to our readers to know what were the opinions of M. Siebold, and the best authority on the economy of the *Psychidæ*, M. Bruand, only four years ago. M. Bruand, who opposes the theory of a *Parthenogenesis* in the *Psychidæ*, quotes triumphantly as his highest authority M. Siebold himself. The latter in the preface to his work admits his former scepticism, but adds, that modern histological investigations have given a much greater assistance to his later inquiries.

We copy the following from M. Bruand's monograph on the *Psychidæ*, trusting that it may induce some of our readers to look out for species in this country. Stainton (Manual) gives six species as inhabiting Great Britain, and places them among the *Bombyces*. M. Bruand has described and figured most beautifully eighty-two species; he places them among the *Tineidæ*.—ED.

Translated from the Introduction of M. Th. Bruand's Monograph on the Psychidæ.—This is one of the tribes most puzzling; one of those in which there are many errors, and errors difficult to establish by proof. The perfect insects in many species resemble each other strongly, especially the females, in whom the likeness is so strong, that even with the lens we can discover no sensible differences. As to the larvæ, the most exact figures can scarcely give an idea of the slight variations which distinguish them. The synonymes it is almost impossible to unravel, and we can readily imagine this, when we know that ancient authors in describing one of the species of this genus, did not suspect the existence of many other allied examples. Their descriptions are so vague that they may be applied indifferently to four, five, or six species. Add to this that the figures of Hübner are very incorrect, those of Duponchel deficient, and the others altogether imperfect. In such a position I had only one course to pursue, and that was to compare with each other the *Psychidæ* of different collectors of authority; then by giving a drawing *perfectly exact*, to stop all doubts for the future. This is what I have done, and my obligations are due for much information upon the subject communicated

* Any of our readers interested in this subject, would do well to read in addition to M. Siebold's little work, "The Alternation of Generations, or the Propagation and Development of Animals through Alternate Generations;" by J. J. S. M. Steenstrup, translated by Busk; Ray. Soc., 1844. Also on "Parthenogenesis, or the successive production of Procreating individuals from a single Ovum;" by Professor Owen, 1849.

to me by M. Boisduval, M. Lederer, M. Boyer de Foscolomben, M. Bellier de la Charignerie, and M. Millière de Lyon.

The tribe which will occupy our attention presents great difficulties. On the other hand, the observing naturalist will find it a very interesting and attractive study. In reality there are few groups of insects in which infinite variety is more remarkable, or where Providence has more multiplied his admirable resources.

If it were only the mystery which some naturalists have thrown around the reproduction of the *Psychidæ*, it would add another attraction to the observer. In reality some entomologists have held that the reproduction takes place without a conjunction of the sexes. Pallas and Degeer have made known and defended this opinion. Others without going this length have affirmed that frequently the eggs of the different species produce at one time entire broods of males, and at another of females. These two questions have been the subject of an able and very conscientious memoir by M. D. Siebold. This naturalist, to refute the lovers of the marvellous, has appealed principally to anatomy, and has demonstrated triumphantly to my mind that the study of the generative organs in the two sexes, (parts quite distinct from those of reproduction,) must necessarily lead to the conclusion that the fertilization of the egg is the result of a conjunction of the sexes in the genus *Psyche*, just as it is in other genera of lepidoptera. I must, however, be permitted to find fault with M. Siebold. He places Reaumer among the authors who admit reproduction without contact with the male. Now these are his words:—"Would the males and the females of the *Tineidæ* be moths without wings? It is more likely that the male and winged moths, by which the female or females are fecundated, have escaped my notice; which may have happened from a variety of circumstances."—(Ins. III, p. 153, Paris, 1737.)

This phrase seems to lean rather to an opinion contrary to that which is attributed to him by M. Siebold. And I may take this opportunity of remarking that Reaumer was rarely deceived in his observations; that he examined and studied with a remarkable truthfulness and extraordinary patience; and that in his memoirs are to be found very precise observations upon insects which authors have thought they were noticing for the first time, more than one hundred years afterwards. I may notice among others *Carpocapsa splendana*, Ins. 77, p. 501-4; *Eudopisa pisana*, Guën, same vol., p. 483; *Gracillaria syringella*, same vol., p. 242; *Psyche helicinella*, Ins. III, pl. 15, f. 20-22. *Psyche triquetrella*, same vol., pl. 15, f. 7, 8. M. Guènee, Ind. Europe, *Microlepidop*, says this figure is so coarse and large that we cannot recognise it. I own I think it very exact, and that it cannot cause the least doubt.

As to the second question, it is quite true that sometimes a brood produces one or two females only, to twenty or thirty males. At another time it will be quite contrary. It may happen that the entire batch only produces individuals of the same sex, without that circumstance bringing the least proof into the discussion; for if one batch of eggs only produces males, the next may furnish only females. We cannot therefore conclude anything from an isolated brood.

I can certify that I have observed many sets of eggs which have not

produced larvæ. not having been fertilized. On the other hand, I have obtained individuals of both sexes every time that I have made observations upon a dozen larvæ. If the contrary were many times established it would prove nothing conclusive. It has happened to me to raise a whole brood of *Aglia tau*, fifty-four chrysalides, and only one male. From this we can only come to one conclusion, that in certain species the male is much rarer than the female. In the *Psychidæ*, on the contrary, *the two sexes are in about equal numbers*; even the females predominate, as they do in many other genera. As to the facility with which we may be led to false conclusions, M. De Siebold gives many examples, and it is sufficient to make ourselves acquainted with the habits of the *Psychidæ*, to become convinced that in this genus, *more than in any other*, we are exposed to numerous errors. Thus I firmly believe that the two sexes are reproduced in the *Psychidæ*, as in other genera of the same order.—[Essai Monographique sur la Tribu des Psychides. Par M. TH. BRUAND, of Besançon. Paris, 1853.]

Notodonta cucullina.—Mr. F. O. Standish, in a letter dated May 12th., 1858, gives me the following interesting particulars respecting this insect:—In September, 1856, he had a few larvæ sent him. The moths made their appearance from May 11th. to June 16th., 1857; on the latter day he had a brood of fertilized eggs. These hatched, and produced full-grown larvæ about the middle of July; and from August 3rd. to 15th., of the same summer, eight moths made their appearance. The remainder are making their début this spring, (1858.) It would appear that the extraordinary heat of last summer had a double-brooded influence upon this insect, which has been always considered, by both British and Continental entomologists, only single-brooded. If any of the readers of "The Naturalist" have ever met with a parallel case, I hope they will communicate their experience.—H. HARPUR CREWE, Stowmarket, May 28th., 1858.

Liparis monacha.—In noticing this insect among the Lepidoptera of Suffolk, I expressed a doubt as to the correctness of the statement in several entomological works, that the larva feeds upon *fir*. I am happy to be able to set the matter at rest. My friend Mr. Bond informed me the other day that he had several times both taken and bred the larvæ from the Scotch fir, (*Pinus sylvestris*.)—Idem.

O. gonostigma.—At page 53, No. 59, "Intelligencer," 1857, Mr. Machin gives us a most interesting account of his having bred a second brood of this insect in August and September, from eggs laid in July of the same year. This moth has always been considered single-brooded in England, and probably the unusual warmth of last summer was the cause of this apparently abnormal occurrence. I find, however, that on the continent it is generally, if not always, double-brooded. M. Guenée and Duponchel remark:—"L'insecte parfait se montre pour la première fois à la fin de Mai, ou au commencement de Juin, et pour la seconde en Aout, Septembre, et Octobre." The perfect insect appears for the first time at the end of May or beginning of June,

and again in August, September, and October. It is therefore by no means improbable, that in warm summers, like that of 1857, *O. gonostigma* is double-brooded in the wild state in England.—Idem.

Notodonta trepida.—On May 27th., I bred a very fine female *N. trepida* from a pupa dug up the previous autumn. The following evening was warm and cloudy, and being very anxious to secure an eligible husband for my fair protégè, I took her up to the nearest wood at half past seven p.m., and having deposited her upon the stem of a large solitary oak, just outside the wood, I left her to her devices and returned home. At half past ten I donned my lantern and again sallied forth. Upon arriving at the tree I found that my fondest hopes were realized. The fair one had been wooed and won by a young gentleman of magnificent stature and unexceptionable appearance, and the nuptial knot was tied. The female soon battered herself to pieces, but laid a goodly lot of eggs. The male now graces my collection. I need not say that I thought myself fully repaid for my four miles walk in the dark. The eggs laid May 20th. and 31st., began to hatch June 5th. I hope I may be more fortunate with the larvæ than I was last year. On June 2nd., while walking up from Woolwich to Shooter's Hill, I espied on one of the lamp-posts on the Common, what I took to be a male *Cerura vinula*. Having climbed up and secured my friend, I found him to be a very large but rather worn male *N. trepida*.—Idem.

Asthenia luteata.—The larva of *A. luteata* appears to be, comparatively speaking, unknown. It is a small, pale green and rather hairy larva, in shape somewhat resembling some of the *Eupithecia*, and feeds on maple in August. I have for two or three years past been in the habit of beating it, but never reared it till last week. I always took it to be a *Eupithecia*.—Idem.

Ceropacha ocularis.—A splendid female of *Ceropacha ocularis* made its appearance in my cage last night, (June 13th.) I dug the pupa under loose bark at the foot of a large poplar, January 11th.—Idem.

Notodonta cucullina.—One of the two larvæ of *N. cucullina*, which I took in this neighbourhood, August 18th., 1857, produced a fine male, June 12th.—Idem.

Rapidity of growth in larvæ of the Notodontæ.—Mr. Greene doubts the possibility of a *Notodonta* larva hatching and feeding up in the course of a month. Mr. F. O. Standish informs me that last year two larvæ of *N. Carmelita* fed up in very little more than a fortnight.—Idem.

Capture of Micra Ostrina.—We have much pleasure in recording the capture of this hitherto rare species by Dr. Battersby and his daughter, near Torquay. Its habits appear to resemble those of *Acontia luctuosa*, which the same gentleman took last year in considerable numbers. Dr. B. has secured three specimens of *M. Ostrina*, and will no doubt find many more. The only other known British specimen was taken at Bideford, in the same county in 1825.—Ed.

Clouded Yellow Butterfly.—I took a fine female Clouded Yellow on Tuesday last, the 8th. of June, which is, I think, an extraordinary event. The specimen was seen alive by at least ten persons, and that it was just out from chrysalis, as the spaces between the nervures bore that limp condition which is observable in insects before the wings have become stiff by flight. The same day I had the good fortune to take a specimen of *M. cinxia*, rather an event with me.—J. WESLEY, The Close, Winchester, June 11th., 1858.

[The 8th. of June is the earliest date I have ever known of the occurrence of *Electra*. The earliest previously recorded was the 29th. of that month. I should be glad to hear more of the occurrence of *Cinxia*; if taken near Winchester, the date, the exact locality, etc. I have heard of its capture lately in Lincolnshire, but suspect that *Artemis* was mistaken for it.—F. O. MORRIS.]

SYSTEMA NATURÆ.

BY THE REV. F. O. MORRIS.

(Continued from page 140.)

Phalangista Cookii, Cuv. Desm. Tem.

Schinz. *P. Banksii*, Gray.

Phalangista fuliginosa, Ogil. Schinz.

Phalangista felina, Wag. Schinz.

Phalangista canina, Ogil. Schinz.

Phalangista Xanthopus, Ogil. Schinz.

Phalangista viverrina, Ogil. Schinz.

Phalangista incana, Schinz.

Phalangista nana, Geoff. Desm. Schinz.

P. gliriformis, Linn.

PETAURUS.

Petaurus taguanoides, Schinz. *Phalanger taguanoides*, Geoff. *Didelphys Petaurus*, Shaw. *Petaurista taguanoides*, Desm.

Petaurus macrourus, Desm. F. Cuv.

Schinz. *Didelphys macroura*, Shaw.

Petaurus flaviventer, Desm. Les. Schinz.

Petaurus breviceps, Schinz. *Belidea breviceps*, Gould.

Petaurus sciureus, Less. Schinz. *Didelphys sciurea*, Shaw.

Petaurus Peronii, Desm. F. Cuv. Schinz.

Petaurus Ariel, Schinz. *Belidea Ariel*, Gould.

Petaurus pygmæus, Less. Fisch. Schinz.

Petaurista pygmæa, Desm. *Didelphys pygmæa*, Shaw. *Acrobates pygmæus*, Desm.

DENDROLAGUS.

Dendrolagus ursinus, Müll. Schinz.

Dendrolagus inustus, Müll. Schinz.

PHASCOLARCTOS.

Phascolarctos cinereus, Schinz. *P. fuscus*, Desm. *Lipurus cinereus*, Schreb. Waterh.

HYPSIPRYMNUS.

Hypsiprymnus murinus, Pander et d'Alton. Schinz. *H. setosus*, Ogil.

H. Peronii, Waterh. *Macropus minor*, Shaw.

Hypsiprymnus micropus, Gould. Water. Schinz.

Hypsiprymnus Whitei, Schinz. *H. Philippi*, Ogilby.

Hypsiprymnus penicillatus, *Watreh. Schinz.* *H. murinus*, *Ogil. Bettongia penicillata*, *Gray.*
Hypsiprymnus Gilberti, *Gould. Schinz.*
Hypsiprymnus Ogilbyi, *Schinz.* *Bettongia Ogilbyi*, *Gould.*
Hypsiprymnus cuniculus, *Ogil. Water. Schinz.*
Hypsiprymnus rufescens, *Schinz.* *H. melanotis*, *Ogil. Bettongia rufescens*, *Gray.*
Hypsiprymnus Grayi, *Gould. Schinz.*
Hypsiprymnus campestris, *Schinz.*
Bettongia campestris, *Gould.*

HALMATURUS.

Halmaturus giganteus, *Schinz.* *Macropus giganteus*, *Shaw.* *M. major*, *Shaw. Gray. Cuv. Schreb.* *Didelphis gigantea*, *Linn.* *Kangurus labiatus*, *Geoff et Desm.*
Halmaturus fuliginosus, *Schinz.* *H. griseo-fuscus*, *Gold.* *Kangurus fuliginosus*, *Desm. Fr. Cuv. Geoff.*
Halmaturus laniger, *Schinz.* *Macropus lanigerus*, *Griff.* *Kangurus laniger*, *Geoff. Wag. Schreb.* *K. rufus*, *Desm.*
Halmaturus unguifer, *Gould. Waterh. Schinz.*
Halmaturus frænatus, *Schinz.* *Macropus frænatus*, *Guld. Water.*
Halmaturus lunatus, *Schinz.* *Macropus lunatus*, *Gould. Water.*
Halmaturus leporides, *Schinz.* *Macropus leporides*, *Gould. Water.*
Halmaturus Parryi, *Schinz.* *Macropus Parryi*, *Bennet. Water.*
Halmaturus elegans, *Schinz.* *Macropus elegans*, *Lambert. Water.*
Halmaturus Bennetii, *Schinz.* *Macropus Bennetii*, *Water.* *M. fruticus*, *Ogilby.*
Halmaturus albus, *Schinz.* *Macropus albus*, *Gray. Water.*
Halmaturus ruficollis, *Goldfuss. Water. Schinz.* *Kangurus ruficollis*, *Desm.* *Macropus ruficollis*, *Less. Fisch.*
Halmaturus rufo-griseus, *Schinz.* *H. griseo-rufus*, *Goldf. Geoff. Wag.* *Macropus rufo-griseus*, *Desm.*
Halmaturus nemoralis, *Wag. Schreb. Schinz.* *Kangurus ualabatus*, *Less.* *K. Brunii*, *Desm. Fr. Cuv. Geoff.* *Macropus ualabatus*, *Fisch.*
Halmaturus Irma, *Schinz.* *Macropus Irma*, *Jourdan. Water.*
Halmaturus leptonyx, *Wag. Schreb. Schinz.*
Halmaturus Brunii, *Schinz.* *Didelphis Brunii*, *Schreb.* *Kangurus veterum*, *Less.*
Halmaturus manicatus, *Schinz.* *Macropus manicatus*, *Gould. Water.*
Halmaturus Billardieri, *Schinz.* *H. brachytarsus*, *Wag. Schreb.* *H. Tasmaniei*, *Gray.* *Macropus rufiventer*, *Ogilby.*

(To be continued.)

Miscellaneous Notices.

Migratory Birds.—Migratory birds were very early with us this spring. I saw a single Swallow on the 11th. of April, and fifty or sixty Swallows and Martins a fortnight afterwards. The Cuckoo we heard on the 18th. of April. A gentleman's gardener in this parish has got a specimen (stuffed) of the Hairy Woodpecker, which he shot himself; they are rather scarce birds in our clime, I believe. A Piefinch has contributed

to the materials of his nest a portion of an old Greek lexicon, which the boys at the Grammar School at Bromsgrove had torn up for "hare and hounds" purposes.—H. ALDHAM, Vicarage, St. Prior, May 12th., 1858.

[With us, here in the north-east, migratory birds were, for the most part, unusually late this spring—I suppose from our proximity to the east coast, and the prevailing cold winds from that quarter. I should like to hear more about the Hairy Woodpecker. The Piefinch is, I suppose, the Chaffinch; indeed, if I remember aright, as an old Bromsgrovian, [it is one of the Worcestershire vernacular names of that bird.—F. O. MORRIS.]

Peregrine Falcon.—A Peregrine Falcon was shot near Newmarket, Cambridgeshire, December 15th., 1857. It was an adult female.—SAMUEL PARKER SAVILL, JUN., 13, Regent Street, Cambridge, May 15th., 1858.

Spotted Crake, (Rallus Porzana.)—On the 23rd. of April I had the good fortune to obtain a male of the above elegant Crake, shot by the side of the River Cam, Cambridge.—Idem.

Norfolk Plover, (Charadrius Œdienemus.)—In a fallow field a short distance from the village of Yelling, Huntingdonshire, a fine male Norfolk Plover was shot. A gentleman in the neighbourhood informs me he never before knew of one being obtained in the above locality.—Idem.

Greater Spotted Woodpecker, (Picus major.)—I have a specimen obtained at Swaffham Priory, Cambridgeshire, April 24th., 1858.—Idem.

Blue-winged Teal.—A specimen of the Blue-winged Teal, (*Anas discors*), was shot near here a few weeks ago. Can any of the readers of "The Naturalist" inform me if it has been met with in Great Britain before.—W. G. GIBSON, 75, High Street, Dumfries.

Letter-box Birds' Nests.—A day or two ago we heard of a bird's nest in the letter-box of Whippingham Post Office, Isle of Wight. Here is a parallel case from a London paper, as recorded by a Belgian journal:—"At Heigne, near Charleroi, a Tom-tit has built its nest in a corner of the letter-box, and has there laid eight eggs, which, for some days she has been engaged in hatching. Though letters are dropped into the box, she takes no notice of them; and when the postman opens the box to collect the letters, she manifests no fear."—F. O. MORRIS.

Curious circumstance.—A few days ago a Tom-tit was seen to go into a hovel in the occupation of Mr. Joseph Symonds, at Over, and his brother having suspicion that it had a nest somewhere about, at last discovered it in the pocket of one of his own waistcoats. It had laid six eggs, and is now sitting upon them undisturbed.—*Newspaper Paragraph*.

Occurrence of the Hoopoe in Sussex.—Mr. Vidler, superintendent of Pevensey Levels, informed me that he had seen a Hoopoe on the 29th. of April, that had just been shot by Mr. Ade, farmer, of Charleston, near Alfriston, Sussex. It was very thin, and half of the under mandible was shot away. A. E. Knox, Esq., in his charming “Ornithological Rambles in Sussex,” says, “It has been killed in different parts of Sussex, generally near the coast.” That I can fully bear out, as I can mention one in my own collection, one at the New Inn, Eastbourne, and several in the collection of Mr. Albert Vidler, of South Street, Eastbourne, Sussex.—JOHN DUTTON, South Street, Eastbourne, (formerly of Hammersmith,) May 3rd., 1858.

Rare Birds in Leadenhall Market.—When staying in London, in April last, I procured, in the market one day, a magnificent specimen of the Great-crested Grebe, (*Colymbus cristatus*.) It was exactly in the state of plumage so faithfully portrayed in Morris’s splendid plate. I also was fortunate enough to obtain a fine specimen of the Gadwall, (*Anas strepera*.) in the delineation of which the reverend gentleman has also been most happy.—Idem.

TO FLORENCE NIGHTINGALE.

AMISSOS queritur fœtus Philomela sub umbrâ,
 Ipsa magis liquidis commemorata modis;
 LUSCINIA ast nobis FLORENTIA gratius olim
 Carmen, et auspicium, spe meliore, dedit;
 Letitiæ voces, blandi medicamina vultûs,
 Indefessa manus—Relligionis amor—
 Hæ tibi erant artes, O spectatissima Virgo!
 Fræta quibus, magnum mens tua gessit opus:
 Nobilis ante alias, vives, Lux splendida sæcli,
 Nec fama evadet, nec morietur honos;
 Anglica te Tellus—pia te Regina beabit—
 Te servata cohors, te sacer Ipse Deus!

REV. W. H.

Proceedings of Societies.

East Kent Natural History Society.—(Continued from page 146.)—A fourth—and I am sure you will say not a small advantage—aimed at by this society, is the admission of the fair sex into its ranks. To them the study of shells, insects, and flowers, is peculiarly suited. The exquisite

forms and colours of the first; the beautiful and marvellous transformations and pencillings of the second; the fragrance and lovely hues of the last, seems essentially adapted to claim their attention and fostering care. And it has ever been a source of great surprise to me, that out of the large number of collectors, so few ladies should be enlisted in the pursuit. But a new era is, I hope, about to dawn, and that the Fair Maids of Kent, by taking the offer of this society to enrol themselves as members, will show to the world at large, it is not their wish to be excluded from learned societies.

I will only name another advantage a society like the present offers.

It keeps a correct registry of Natural History, for reference, of every interesting fact occurring within its district. This is of great value, not only to those belonging to the society, but to others engaged in unravelling the mysteries of the science, who, perhaps, by the acquisition of a fact thus registered, may complete a chain of evidence to the perfect elucidation of his theory.

We will now proceed to inquire into the nature of the society, which we are most anxious should be better understood by all classes.

The study of Natural History, next to that of religion, is the most ennobling to which the human mind can give its attention; since it not only leads it to a closer insight into the marvellous works and laws of Creation, but insensibly draws it nearer and nearer to that glorious Being, whose infinite wisdom could alone have formed so vast and beautiful an universe, which is yet governed by laws so wonderfully simple. Thus, step by step, as we advance in this study, we are more and more forced to acknowledge the Divine Power, and from the contemplation of his works, to adore their Creator.

In pursuing this delightful subject, one thing has always most forcibly struck me as a conclusive answer to those who seek to disparage the proceedings of the students in Natural History, that is what it has pleased the Almighty Power to form, cannot degrade the human mind to study; and therefore, we would throw a veil of pity over such hearts, so little elevated by the revelations of creation—so dead to the wondrous harmonies of nature. But the labours of such men as Linnæus, Buffon, Cuvier, Humboldt, and many others, are now spreading far and wide their fruitful seed, which neither empty satire can injure, nor impertinent ridicule uproot.

To give a remarkable illustration of the harmonies I speak of. A bone was presented to Professor Owen, (than whom, few countries can boast a brighter star,) and on examining it carefully, he pronounced it to be the leg-bone of a bird; and from deductive reasoning, based upon the simple, articulating surfaces, he erected the skeleton of a bird, such as had never yet been known to science—a wingless bird. And only a

short time elapsed before other osseous remains, belonging to the same species, arrived from New Zealand; and his greatest triumph was achieved on seeing a small living specimen brought over from that country, and which, no doubt, many here present, have seen in the London Zoological Gardens; I allude to the extraordinary little *Apteryx*. Here was a noble result of mental combination, of truthful appreciation of nature's undeviating laws, of harmony in its most perfect form. But we may look, and examine where we will, throughout the whole structural arrangement of nature, we find this wonderful principle ever existing. And from man down to the lowest and simplest form of created being, a chain connects one type with another, by a succession of links,—a series of shades and shadowings, that leads the mind imperceptibly onwards and onwards, descending the scale of organic creation, until it verges on that dark and mysterious threshold, where life begins and inanimate nature ends; where growth by secretion separates from inorganic growth by accretion; where the first principle of life bursts into existence, to upwards soar with increasing attributes, till it culminates in the marvellous structure of man!

The mind becomes almost prostrated at the vast field laid open for exploration, at the immensity of the design, at the myriads of living things permeating the air and the water, the surface and the under surface, all combined together—all forming one magnificent whole of symmetry and beauty!

It is by the division of Natural History into classes, that relief is afforded to the almost overwhelmed intellect. These classes are again separated into families, and families are subdivided, so that by taking a section of any part, it will be more readily mastered; and when this is attained, by the connecting links, other groups may be brought under examination, until the mind, like a spring welling from its head, onwards and onwards it gathers as it goes, now a rivulet—then a brook, a stream, a river—until finally it blends with the waters of the mighty ocean.

The East Kent Natural History Society, as its name implies, is in some measure, a purely local gathering; yet, doubtless many of its members belong to other societies.

From one and all, it is to be hoped, that that influence may be given, which will induce the poorer classes to become, in their leisure hours, gleaners in this charming study. In an opening address like the present, I believe it will be better to restrict myself to speak of those divisions of Natural History, within the compass of all to study, and in which East Kent is extremely rich in specimens. Therefore we shall select—ornithology, or the history of birds; entomology, or the history of insects; conchology, the history of shells; zoophyta, includes the zoophytes; and

botany, the study of plants. I shall only now allude to ornithology, entomology, and botany; but I believe you will find specimens of all branches in the room. Three-fourths of the eastern division of the county of Kent is bounded by water. It is the nearest land to the continent; therefore the lover of birds may collect in our districts many very rare specimens—the golden oriole, the roller, the waxwing—many of the hawks, and most of our summer visitors—the Dartford Warbler included, and several varieties of snipe. The great extent of sea coast necessarily makes us acquainted with numerous water-fowl. Consequently there is ample room to make a very valuable collection of British birds, with the kindred study of their eggs.

(To be continued.)

The Retrospect.

I have just received a letter from Dr. Hobson, of Leeds, who says "Mr. Waterton has most solemnly assured me that in naming 'the controversial papers' in the preface he did not allude to you in any way whatever." When a gentleman makes such an assertion I am bound to believe him, and as a matter of course I accept the disclaimer, and am really glad to have the inference removed, which the words in the preface had previously led me to entertain. F. O. MORRIS, June 17th., 1858.

IN "The Naturalist" for this month, Mr. Round, in the second chapter of his very interesting "Natural History of Sunninghill," states that place to be longitude 40° west, and latitude 25° ; adding that it is twenty-four miles west of London. Permit me to observe that the geographical situation of London is longitude $0^{\circ} 6''$ west, and latitude $51^{\circ} 00''$ north. It therefore follows that Sunninghill, being distant from London twenty-four miles, west, the difference can only be that much more (about half a degree) in longitude; and the latitude nearly the same at both places.—THOMAS FULLER, 2, Grafton Place, Bath, June 5th., 1858.

Exchange.

Dr. W. H. Rooke, Belvidere Cottage, Scarborough, has duplicates of the following eggs, which he would be happy to exchange for others.—Merlin, Kestrel, Sparrow Hawk, Long-eared Owl, Spotted Flycatcher, Redstart, Whinchat, Reed Warbler, Nightingale, Greater Pettychaps, Gold-crested Wren, Lesser Pettychaps, Skylark, Red Grouse, Goatsucker, and Common Cormorant.—May 14th., 1858.

THE GAIT OF BIRDS.

BY O. S. ROUND, ESQ.

(Concluded from page 124.)

I do not profess to give any account of foreign birds, except incidentally, but I may mention in passing that I believe we have, in this little island, almost every species of birds known to the ornithologist, with only one or two exceptions, that is the foreign kinds, are only other varieties of the genera which are found with us. If this is admitted, the habits of feeding, flight, song, and movement upon the legs, which I have endeavoured to illustrate and describe, will be generally applicable, and open the mind of the young naturalist to other and deeper speculations. Flight, it is true, is one of the most distinguishing attributes of the feathered tribes, and whether we think of it generally or scientifically, is a most beautiful and graceful movement; but these interesting works of Nature are so far removed from us when on the wing, or if near are so rapid, and consequently so transient in their movements, that our ideas of them, only thus collected, would probably convey a very imperfect impression of their true characters and appearance to our minds, and therefore their *gait* it is which renders them most familiar to us; this I have attempted in the foregoing pages to describe, and distinguish that which properly belongs to each tribe or order, but to shew how much it conduces to set off and render still more attractive by its singular fitness to their several bodily conformations, would be far beyond my skill to describe.

I suppose the shape and mechanism of a bird's leg and foot, is at once one of the most elegant and finished works that can be imagined. We talk of a Duck's splay foot, but see him gliding placidly over the bosom of the clear stream, and see that very foot in its pellucid situation, its yellow hue, shewing still more clearly its elegant movement, and then see if we shall ever again so speak of it. Look at the exquisitely-slender legs of any of our small birds, and only examine the little suit of horny armour in which they are enveloped, the Indian-rubber-like substance which protects the seemingly fragile toes, and I am persuaded you will feel a pleasing and wondering admiration. Turn, then, to the birds of prey, and see the mighty and formidable claws with which they are provided, albeit it may be for a cruel purpose;—it is their nature, and we must not inquire further, for those portions of the boundless scheme of nature, which we do faintly comprehend, display to us such wonderful fitnesses to their purposed ends, that we cannot doubt of a like wisdom (although inscrutable to our limited faculties) being displayed in all. Look at the web-footed which swim, and the superior mechanism—we may almost call it—of those that dive, the partial elongation or extension of the membranes of the toes of

those which frequent both land and water. Thus the Phalarope has a foot very much resembling that of the Coot, though on a smaller scale. Then the Heron, that mighty fresh-water fisherman, is said to have a peculiar character of leg, the scales being supplied with a singular attractiveness, causing fish, within a considerable distance, immediately to resort to the place where he stands, so that, with his keen eye, he darts upon them and feasts at his leisure. It is likely to suppose that it is an oleaginous juice residing in the *rête mucosum*, or under skin of the leg, which is this attraction; for the skin and marrow are dried, and used as a ground bait, and is said to be very effective. I merely refer to this a received opinion, but do not vouch for its accuracy. The middle claw of each foot is also furnished with a sort of comb, or is pectinated; this is probably used by the bird as a comb, for his feathers are both long and coarse; it is, however, a curious fact that this bird and the Nightjar or Fern-Owl, are the only two which possess this peculiar formation, and no two birds, I suppose, can be more dissimilar in their habits and appearance. The Heron also I may mention in this place, is a percher, and builds in trees in companies.

I have spoken of birds which have no hind toes; this is the case with nearly all the Plover tribe and the Curlews, but the Woodpeckers have a curious formation by which they are enabled to move the outside toe on either foot either forward or backward, as inclination or occasion may require; this, it is obvious, is a very useful provision on such very rugged and unyieldly surfaces as they must constantly meet with. Curiously enough, the Cuckoo, which is a pure percher, has the same form of foot, but this is probably for the purpose of supporting him in a better balance than his short leg would otherwise accomplish. The Parrot and Crossbill tribe have the same power, but the Swift or Black Swallow has the most curious foot of any known bird; his legs are very short, and he has four toes of equal length on each foot, which all move independently of each other, and are formed for clasping, so that he can climb with great facility, which is very useful in ascending under the narrow caves of houses, where they have nests, and which by their position they could not otherwise so conveniently enter.

All the perching birds are endowed with strong claws more or less, and these are not only useful in their every-day life on trees, but chiefly during the night-time, when at roost, to preserve them from falling, to which the position of their bodies also contributes. Thus Cormorants, Gannets, and birds which must brave the tempest on the bleak pinnacles of the sea-girt rocks, have sharp claws at the extremities of their large webbed feet, and thus they obtain a firm hold or footing in those difficult situations, besides being of advantage in securing their slippery prey.

The legs of the tenants of air are hardly understood by persons who have not studied anatomy; what we call the leg answers to our foot, and what we call the foot is nothing more than the mere toes; therefore what we consider the thigh in birds is the true leg, although it is true that from using the toes only as in contact with the ground they are furnished with cushions—the attributes otherwise of a foot. The thigh is sometimes covered with long feathers, particularly where it is thick and brawny, as in birds of prey, such as Owls and Hawks; this, however, does not appear to be the only case in which feathers are here present, for we find them on the toes of those birds which have no extraordinary calls for pedal exertion, except in running. Thus all the Grouse are feathered down to the very nails, although this clothing rather partakes of the character of down or hair. The Martin, a small, weak, little bird, has the most beautiful covering of soft white feathers, which completely cover his legs and feet, and his only exertion lies in clinging to the spherical sides of his nest. The Bantam Fowls, which are foreign birds, have their feet covered with true feathers, as have the Cochin China Fowls, now so common, and these have such large and powerful legs as to be ungainly. The domesticated *Gallinæ* have great powers of leg, and are good runners, which power they exhibit particularly in their contests, which are often obstinate enough to continue to the death. The male birds of all this class are furnished with spurs, which are formidable enough, and made the vehicles of much brutal amusement; and it is no small disgrace to some members of our nobility that this inhuman practice has been upheld by their countenance and presence, until of late years; but I trust and believe that it has fallen into considerable disuse, and now practised only by the lowest and most degraded of the community. The Lark tribe are also furnished with what are called spurs, but are in reality nothing but an elongation of the nail of the hind toe, and they are not pugnacious birds.

Having considered the motions of birds in walking, running, clinging, and perching, with reference to each distinct peculiarity or modification of those several habits, I shall, in conclusion of this branch, devote a few words to the subject in general. Birds being biped, or two-legged animals, like ourselves, have many more difficulties to overcome in the balance of their bodies than quadrupeds, or those which have four supporters. It is true that they are not exclusively confined to the earth, not even where they cannot fly; but walking or standing is still but a secondary consideration with most, and yet they exercise it in much more trying situations than we, who are biped also, have to contend with, whether we reflect upon them as poised on the giddy and slender top of the vast pine, or perched on the dizzy peak of some naked rock of the tempestuous ocean; yet in whatever situation they are placed, the powers given to them by a bountiful

Providence are always found to be wonderfully applicable to such emergencies, as I have endeavoured to shew; and setting aside all this, how exquisitely graceful are all their movements; the slope of the foot cannot possibly be calculated more aptly for elegance or firmness, the very shape of the toes is incapable of improvement, and the whole considered either as an indispensable appendage, or beautiful ornament, is like all other of God's works, perfect in itself.

Richmond Terrace, Westbourne Grove, July, 1858.

RAMBLES BY RIVERS.—No. I.

BY SAMUEL HANNAFORD, ESQ.

THE MOORABOOL.

"Hic gelidi fontes, hic mollia prata."—VIRG.

Here are cooling springs,—here grassy meads.

WE are a believer, to some considerable extent, in old Izaak Walton's saying, and have found it as he did, to be a real truth, that the mere sitting by a river's side, is not only the quietest and fittest place for contemplation, but will invite one to it. A Spanish writer, too, says that "Rivers, and the inhabitants of the watery element, were made for wise men to contemplate, and fools to pass by without contemplation." Now, although we do not for one moment pretend that our rivers rival those of Epirus, or Selarus, or the dancing waters of Elusuria, mentioned by our quaint piscator, or even those by which we have strolled at night-fall in the old country—the shrill scream of the Otter, the chorus of the Nightjar, the splash of the Water Rat, the only sounds which disturbed the stillness, save and except the rising now and then of a splendid trout to our fly, (for a lover have we been too of the gentle craft, and a paper of hackles even now brings up to our mind's eye all the old scenes,) still they have their own beauties, and we will be their champion, enlarging, as we deem worthy, on their merits or otherwise. Have you ever visited the Moorabool, dear readers? If not, then take advantage of the first fine day which offers itself, and away with you afoot to judge for yourself of the natural charms of this much-maligned stream;—slow, and paltry, and sluggish we have heard it called, but to it nevertheless we went, for we are not of those who are led away by popular prejudice, and there we beheld enough to clear it ever, in our eyes at least, from the slur cast upon it. Let us walk now, to the bridge at Fyan's Ford, about two miles from

Geelong: here the banks remind us of the dark glen-like scenery of some parts of Ireland,—high hills, whose declivities reach to the water's edge, dark hollows intersecting, into which the daylight scarcely seems to glance. The first object we meet with here is the Black Fan-tailed Flycatcher, a bird whose breast is pure white, and the remainder of its plumage jetty black, ever darting from place to place, wagging its tail as it alights;—and then we have the glorious feeling of hiding,

“and abiding
From the common gaze of men,
Where the silver streamlet crosses
O'er the smooth stones, green with mosses;
And glancing,
And dancing,
Goes singing on its way.”

Small as the stream is here, its banks are indeed lovely to behold, planted, as they are, with rich dense masses of the fresh green sea-rush, (*Scirpus maritimus*,) known to many by the rivers near the sea at home, from the cover of which we start a fine pair of Bitterns, who fly heavily and lazily away; the delicate convolvulus twining elegantly around the stems of the loosestrife, the pink flowers of which are always attractive; and then the lovely white crimson-marked flowers of the *Damasonium*, just peeping, nymph like, above the surface of the water, on which its dark green leaves float refreshingly; our old friend, the vervain, is here too, and the pretty pink *Melaleuca paludosa*. The crow's nest which you see some fifteen or twenty feet above you on yonder tree, shows that floods have there deposited portions of palings and brushwood, swept away during the winter from the residences of settlers higher up; indeed it is said the water on one occasion rose above the bridge itself. How merrily rushes the stream over its pebbly bed, musical as a young girl's laugh, anon widening and becoming deeper, flowing quietly and gently like the more mature thought of manhood. The very seum in some parts teems with animal life, lightly skimming the surface of the water—

“———Flumina libant
Summa leves.”—VIRG.

And it is of the contents of this same, which we so carefully put aside in our bottle, that we intend to discourse. Here are beauties such as many of you have never even imagined, those green hair-like tufts are sufficient to keep the mind on the alert for months to come; and see, too, with the naked eye even, how many thousands of shells we can detach with care,—in fact, we have an impromptu *aquarium* in which these will thrive for many a long day. But they are only shells, we fancy already we hear some one say,—they are, but shells, or their inhabitants,

form a principal portion of the food of many savage nations, and are eaten by civilized ones as great delicacies, and our Government Botanist, in one of his explorations, having lost his way, subsisted for several days on a species of mussel. Their structure, too, is wonderful. The specimens which we procure here more commonly are animals belonging to the *Gasteropoda*, or air-breathing shell, and are without an *operculum*, or covering to their habitation; this flat, many-whorled shell, somewhat like that of a Nautilus, is a *Planorbis*, and great care must be taken in handling it, being brittle and easily broken. The next, which is ovate, also very thin, with a large aperture, is a *Physa*, so named from its pouch-like appearance, and both genera are widely distributed throughout the world. Now watch them, how industriously they are cleaning off the film or conferva which has commenced growing on the sides of the bottle; you will observe, too, with a small pocket lens, how the tongue is used,—the upper lip with its mandible is raised, the lower lip, which is shaped like a horse-shoe, expands, the tongue is protruded and applied to the surface for an instant, and then withdrawn; its teeth glitter like glass-paper, and in *Lymnea*, an allied genus, which is also here, it is so flexible, that frequently it will catch against projecting points, and be drawn out of shape slightly as it vibrates over the surface. The large shell which you observe so frequently on the bank, and the trees which lie half in half out of the water, is a *Unio*; and from the manner in which one end is invariably broken, it is evidently brought there by some water animal which preys on its flesh—probably the water-rat. Truly, much as we admire well-kept Botanic Gardens, there is nothing which so thoroughly refreshes us as a ramble away from the conventionalities of town life, where we can breathe freely without fear of criticism; and we are inclined to think too with Headley, an agreeable writer, whose “Life in the Woods” we lately met with, that one degenerates without frequent communion with nature. “A single tree,” says he, “standing alone, and waving all day long its green crown in the summer wind, is to me more full of meaning and instruction than the crowded mart or the gorgeously built town.” Many is the happy hour we have ere now whiled away by the river side, after all our artifices had failed to lure the finny tribe into our ereel, half dreamy quiet thoughts stealing over us as the stream rolled onwards, from which we were roused only by the remembrance that we had many weary miles to trudge before we could reach our destination. Happy days, indeed, on which we look back with pleasure, not unmingled with sadness,—for whose dreams are ever realized?

But to the scum which covers the surface of the water. What use is that? Ah! peep through a microscope at a small portion, and tell us what you see there: hair-like filaments of the most exquisite patterns art could produce—long tubular cells containing beautiful green spiral coils,

or numerous spherical granules or zoospores, moving restlessly about, and frequently striking against the walls of the cell, as if anxious to escape from confinement. This point gained after a while, they speedily begin to move hither and thither, now wheeling round and round, now oscillating from side to side, and now, as if from sheer fatigue, remaining quiescent. "Truly wonderful," says Hassall, in his "Fresh-water Algæ,"* "is the velocity with which these microscopic objects progress, their relative speed far surpassing that of the swiftest racehorse. After a time, however, which extends to some two or three hours, the motion becomes much retarded, and at length, after faint struggles, entirely ceases, and the Zoospores then lie as though dead: not so, nevertheless; they have merely lost the power of locomotion; the vital principle is still active within them, and they are seen to expand, to become partitioned, and if the species be of an attached kind, each Zoospore will emit from its transparent extremity two or more radicles, whereby it becomes finally and for ever fixed. Strange transition from the roving life of the animal to the fixed existence of the plant." Of these Fresh-water Algæ, we find here specimens of Chara, Conferva, Zygnema, probably many species of each. Not useless either are these minute plants, affording as they do food to so many myriads of the tiny inhabitants, and acting as purifiers to the waters in which they dwell, decomposing and removing all that is noxious, and restoring to the water oxygen, which is essential to all animal life.

We should never tire of the subject, for from the source to the Lal-lal, where the stream

"Adown the steep, with headlong leap
Plunges with roar and plashing."

And from thence to where intermingled with the Barwon it pours its waters into the ocean, there is matter enough, and we leave, even for a while with regret, the glittering Dragon-Flies fluttering over the wild plants, or darting away with the rapidity of a hawk, and feel indeed that Nature has not spread in vain her beauties over the world.

Geelong, Victoria.

NATURAL HISTORY OF NUNBURNHOLME.

BY THE REV. F. O. MORRIS.

(*Continued from page 80.*)

Number four. ———or, to speak more exactly—I "love to be particular," like the Vicar of Wakefield—west south-west, stands a fine Yew tree, in one of the branches of which, but at the side farthest from the

* Introduction, p. 11.

house, at a height of about four feet from the ground, a Golden-crested Wren built its nest last year, and laid several eggs. I took some out for my collection, leaving the remainder, to which she added some more, and safely hatched and reared the brood. She would allow me to go within a foot of her, and watch her sitting on the eggs or young without flying off, which she would only do if still more nearly approached.

Number five. The Blackcap.—The first appearance of this sober-clad but neat little bird this year, was on or about the 6th. of April; I am not quite sure of the exact date; it was our earliest summer visitant. It has been an unusually late and backward spring, after the equally unusually mild winter we have had. The next week there were five in the garden at once, and I have since seen the same number together. The russet brown head of the female is particularly attractive. We have had the nest twice in our garden in a bed of laurels. I think there is no bird whose song is softer than the Blackcap's.

Number six. The Willow Wren.—These little birds are plentiful with us every year, and their lively note is one of the earliest announcements we have of returning spring. The first of them I noticed the present season was on the 16th. of April. They build here and there, all about, in the orchard for instance, and in the shrubbery.

Number seven. The Lesser Whitethroat.—This species I first noticed the current year on the 19th. of April. It is another of the birds whose neatness makes up for its want of bright colours. It is common with us.

Number eight. If any bird can be described as impudent, it is the Sparrow. There are some species which appear, as it were, to have a wholly different nature from all others, as for instance the Robin. The Sparrow is another; where is there a bird at all like him? He is not only a species but a genus, in and by himself; "sui generis" truly, and indeed utterly unlike any and every other. I need hardly say that he is one of our most intimate associates here, but strange enough in this present year we hardly see one. There were plenty a few months ago about the house, but now they have for the most part disappeared. The common flies too, which were such a plague last year, and which this spring came forth on the first warm days from their "winter quarters" in such swarms, seem now to be extinct or nearly so, comparatively speaking. Even in the woods, where I went the other day for the first time this year, on a very hot day, to my most agreeable surprise, scarce once attacked me. I have, however, some fear that this happy state of things may not long continue.

Number nine. The Grey Wagtail.—This is perhaps the most elegant in form of our British Birds, and though no doubt they have often and often been on our premises, as I have seen them in all directions about the neighbourhood in the winter, I do not remember to have noticed but

one within the circumference, if so I may call the limits of the square I am describing; but one day on looking out of my study window, one flew up from the ground immediately beneath it. Oddly enough, this very day on which I am writing (June 28th.,) another paid a visit to our garden, and was engaged for some time picking up insects on a flower-bed, apparently for its young, which probably had been hatched somewhere not far off, by the side of the stream.

Number ten. If you were to judge of the country at large from the portion of it which our garden represents, you would unhesitatingly say that the Greenfinch was the commonest British Bird. It is positively surprising the number of nests they build with us, "here and there and everywhere;" at least it was so last year and the preceding one, but this year (1858) we have had but very few of them about; I have only noticed one nest, which was built in the top of a cypress tree about seven feet high, in which a Blackbird hatched and brought up her brood last year. In fact there are comparatively few nests of any birds in our garden this year, in comparison that is to say, with the great numbers there have been in previous seasons.

Number eleven. I generally hold a conversation with many of the birds I meet with in my walks,—Robins, Redstarts, Wagtails, Goldcrests, Titmice, and others, and until I made a new acquaintance, new, that is to say as to my knowledge of the name of my friend, having frequently heard a sound as of the "Woodpecker tapping the hollow beech tree." I had asked more than once "who's that knocking?" The sound was that apparently of a small Woodpecker, but I could not, for some time make out who struck the blows that resounded so clearly from the tree at hand. At last I discovered the author to be the Oxeye, striking away "con amore" in and on a Yew tree, one which corresponds, near the opposite side of the house, with the one already mentioned. These trees are, I may remark "en passant," the nurseries and bed-rooms of a great portion of my large family of birds. There I heard another of these feathered smiths "hammering away" somewhere among the boughs. I walked up to see what he was about when he flitted out into a neighbouring thorn-bush, (mem. Thornbush,) and there he stood confessed, swaying himself up and down with all the energy imaginable; knocking his bill against the branch he was on till it made it resound again. What he was getting I cannot think, for the branch was a perfectly bare one, and it and every part of the tree thoroughly sound. No doubt, however, he had good reason for what he did.

(To be continued.)

Entomology.

LIST OF LEPIDOPTERA OCCURRING IN THE COUNTY OF SUFFOLK.

BY THE REV. JOSEPH GREENE, M.A., ASSISTED BY THE REV. H. HARPUR CREWE, M.A.,
AND C. R. BREE, ESQ.

[The portions of these papers contributed by Mr. Crewe and Mr. Bree, are signed with the initials C and B respectively. N.B. at the head of a paragraph signifies that the remarks are made after those of Mr. Greene.]

(Continued from page 135.)

BEFORE entering upon the extensive divisions of the *Noctuæ* and *Geometræ*, it may be useful, for the purpose of reference, to draw up a brief resumé of those already considered, and for this reason I append the following short statement:—

RHOPALOCERA.

Omitting *C. chryseis* as not indigenous, the British species of *Rhopalocera* amount to sixty-five. Of these, forty-seven have been found in Suffolk, including *A. galathea*, on the authority of Mr. Garness. Several rarities are included in the list, viz., *V. antiopa*, *A. luthonia*, and *T. pruni*. Mr. Crewe and Mr. Bree express themselves perfectly satisfied with Mr. Garrod's statement respecting the seven *Lathonias* declared by him to have been captured by himself. It is not my place to question this statement, but I would nevertheless venture to remind them of the way in which Mr. H. Doubleday demolished the story of Mr. Seaman's alleged capture of the same insect, at the same place. (Vide "Zool.," 5146.) I am disposed to question *M. athalia*. Judging by my experience of other counties, I should say that the proportion of this order occurring in Suffolk is above the average.

HETEROCERA.—Sphingidæ.

Omitting *C. nerii* and *S. pinastri* as doubtful, we have thirty-four British species. Of these, it appears, twenty-one occur in Suffolk—a large proportion, if we put aside the five extremely rare, or at least local, species of *Trochilium*. This genus seems to be but poorly represented in this county, but ample amends are made in the *Sphingidæ*, the *whole* having been taken. It seems surprising that so few of the insects in this order should be taken at sugar. Can any of my readers tell me whether they have taken them in this manner?

HETEROCERA.—Bombyces.

Omitting *L. v-nigrum* as not British, and the *Psychidæ* as not yet indisputably located, we have ninety-four indigenous species, of which Suffolk possesses sixty-nine, or rather more than two-thirds. The list contains some notabilities,

as, for example, *D. pulchella*, *L. testudo*, *N. cucullina*, *N. carmelita*, *N. dodonæa*, *N. chaonia*, *N. dictæoides*, and *C. curtula*. It seems difficult to explain the reason or reasons, why the same insect should be rare in one county, and comparatively common in another. Of course it is easy to understand why it should not occur at all in one place, though it does in another. But when it *does* occur in two counties, the food-plant or tree being equally common in both, why should it be plentiful in one, and rare in the other? Take, for example, *N. cucullina*. My indefatigable friend, Mr. Crewe, (after, I doubt not, many an hour's hard work,) found this insect in Suffolk. Its food (maple) is common enough there; and if any one would be more likely to find it than another, it would be Mr. C.; yet he only beat *two* larvæ. Now, he and I took it *commonly* in Bucks. How is this to be explained? Take, again, *N. dodonæa*. During nearly four years' residence in Gloucestershire and Bucks., I could not discover, by digging, beating, etc., more than about twelve specimens in both counties together; yet in Suffolk I took upwards of two hundred pupæ in one week! I should be very glad to receive some information or suggestions on this point. But to return. I will just give in figures the numbers alluded to above, and then for the *Noctuæ*, concerning which, however, my own personal information is comparatively limited.

| | | | | |
|---------|---------------|----|------------------|------|
| British | { Rhopalocera | 65 | Found in Suffolk | { 47 |
| | { Sphingidæ | 34 | | { 21 |
| | { Bombycæes | 94 | | { 69 |
| <hr/> | | | <hr/> | |
| 193 | | | 137 | |

PART II.—HETEROCERA.

DIVISION III.—NOCTUÆ.

THE arrangement of M. Guenée is followed in this list.

1. *T. derasa*.—Not uncommon at sugar at Brandeston. Larva twice beaten from *hawthorn*, but not bred. It is a very shy insect.

N.B.—Some years ago I used to take this insect in my grounds at sugar, but I have not met with it at all during the last three or four years. I have bred it from larvæ found on hazel. (B.)

I have taken the pretty fulvous-white spotted larva of this insect upon *bramble* as late as the first week in November. The perfect insect appeared May 21st. I have no doubt that it is double-brooded, as I have taken the moth throughout the month of August. (C.)

2. *T. batis*.—Rarer than the preceding, though occasionally taken at sugar. I used to meet with the larvæ in profusion in Bucks, feeding upon brambles, in the dense portions of the woods surrounding my house, but it seems very subject to ichneumons. The chrysalis is very singular in its appearance, and is enclosed in a weak web.

N.B.—Taken, but not commonly, at sugar in the woods round Stowmarket. (B.)

As shy at sugar as its congener. It never seems to get intoxicated, and no matter how potent the liquor, or how protracted the bout, it bolts off with the utmost activity upon the approach of the lantern and pill-box. I have taken the larva several times upon *raspberry*. (C.)

3. *C. duplaris*.—Once or twice beaten from oaks, in the neighbourhood of the Duke of Hamilton's park at Easton.

N.B.—This insect is common in the woods near Stowmarket. (B.)

I have very frequently bred this insect from larvæ beaten in September and October, off *birch* and *hazel*. It is a dusky olive colour on the back, with a yellow head, and is semi-transparent. It so closely resembles the larva of a *Tenthredo*, that for a year or two I used always to throw it away when I beat it, under the idea that it was one of "those vile saw-flies." (C.)

4. *C. diluta*.—I have taken this insect in the woods near Stowmarket, both the larva and imago. (B.)

The larva of this insect is pale green, with a brown head, very similar to that of *C. diffinis*. It is full-fed the beginning of June, and feeds on oak. (C.)

5. *C. or*.—I did not meet with this species, and I only mention it for the purpose of saying, that I think the larva prefers aspen to poplar, the food given in Stainton's "Manual."

N.B.—Not uncommon in the woods near Stowmarket. (B.)

The singular, flat-headed, depressed-looking larva of this insect, is not at all uncommon in August, on *aspen*, in the woods round Ipswich and Stowmarket. It spins two leaves together, where it lives, only coming out to feed. When full-fed it constructs a slight earthen cocoon, similar to that of *C. ridens*. It is so transparent that its intestinal arrangement is plainly visible. When young it so closely resembles the larva of *D. fagella*, that any tyro might easily confound them, especially as they occur at the same time. I have beaten it in Herts. as late as the end of October. I have once or twice taken it upon the Lombardy poplar; but, as Mr. Greene remarks, aspen is undoubtedly its favourite food. The pupa is almost precisely similar to that of *C. ocularis*, but not so robust. The moth is very shy at sugar, and requires nimble fingers to box. (C.)

6. *C. ocularis*.—Considering the almost universal rarity of this beautiful insect, I may consider myself fortunate in having bred nine splendid specimens, all taken by digging. The larva is well described in the "Manual," but I should decidedly give *poplar* as its food, though it may very possibly feed on aspen also, though I never met with it on that tree. All my pupæ were taken at the roots of what is called, I believe, the Lombardy poplar. Like most, if not all the species in this genus, the larva spins two leaves close together, and resides between them during the day-time, coming out to feed during the night. It is almost useless, therefore, to look for it by beating. By looking at the leaves against the sky, it may sometimes be detected, (if there at all,) and should there be any shrubs scattered about, all the leaves glued together should be carefully opened and examined. It is also well worthy of notice, that the little bits of decayed leaves hanging curled up on the stalks are favourite hiding or resting-places with the larva of this and the allied species. They should therefore not be omitted by the tyro anxious to see this fine insect in his collection. The perfect insect seems fond of sugar, (I have taken it twice,) but is very shy and timid.

N.B.—I bred a specimen of this insect, June 8th., 1857, from a pupa found

under the moss on an old poplar. At sugar I took one, June 19th., 1856. Another June 22nd., 1857. It was looked for assiduously during the June of this year without success. I never found the larva. I look upon it as one of the rarest of the British *Noctuæ*. (B.)

The only specimen I possess, a splendid female, was bred, June 13th., from a pupa which I dug up under loose bark at the foot of a large old English poplar. My friend Mr. Bree also found his pupa on this tree. (C.)

7. *C. flavicornis*.—Larva occasionally on birch. Mr. Chapman, of Glasgow, informs me that he takes it in September, and, knowing his accuracy, I am fully satisfied of the correctness of this assertion. As far, however, as my own experience goes, I can only reiterate my former statement, that I never took it later than the end of June. I cannot think that it is found in England much after that period, and I believe there is no doubt but that there is only one brood of this and the following species. It is said to come to sugar, but I have not met with it.

N.B.—I have no hesitation whatever in concurring with my friend Mr. Greene in thinking that this larva (at any rate in England) is never found later than July. It is by no means uncommon in some parts of Derbyshire upon birch. I have never beaten it later than the middle of July, and then only an occasional straggler. The majority are full-fed by the end of June. It is pale green, semi-transparent, with a reddish head, and black spiracular spots. It lives between leaves like the larva of *C. or.* The pupa resembles that of *C. ridens*. It is enclosed in a slight cocoon, under moss or amongst the roots of grass at the foot of the tree. I never took the perfect insect. (C.)

8. *C. ridens*.—I was also fortunate in finding a considerable number of the pupæ of this insect at Brandeston. It was, however, very local. In my paper on pupa digging I have given directions for finding it, and I need not occupy space by repeating them here. It was much rarer at Playford. The specimens taken in Suffolk are far more richly-coloured than any I have seen captured in the north. Not having myself met with the larva, it may seem somewhat presumptuous for me to express my firm conviction that the period (September) given by Mr. Stainton, in the "Manual," is wholly incorrect. I can only say that I always found the pupa from a month to five weeks *before* that date. It strikes me that Mr. S. has fallen into the error (not unnatural, perhaps, if he never met with the insect himself) of *supposing*, that as the insect appeared in the spring, the larva had *probably* fed up the preceding autumn. But supposition and probabilities will not do in these matters.

N.B.—I found a single larva of this insect July 10th., 1857, which I bred in May, 1858. It was feeding upon oak. (B.)

The beautiful larva of this still more beautiful insect, is of a bright primrose yellow, minutely spotted with white; the head is reddish. It feeds, I believe, exclusively on oak. It is full-fed about the last week in June. From June 22nd. to 30th. this year, 1858, a friend and myself beat six or seven just ready to spin up. It is very liable to ichneumons. The pupa is

red, and sharply pointed. Mr. Stainton certainly made a slip of the pen when he gave September as the month for finding the larva. (C.)

9. *B. perla*.—This insect is taken, but not commonly, in the neighbourhood of Stowmarket. (B.)

(To be continued.)

Rare Lepidoptera.—The last two or three years have been distinguished by the re-appearance of rare species of British Lepidoptera. *Agrotis lunigera* and *lucerna*, *Heliophobus hispida*, *Crimodes templi*, *Petasia nubeculosa*, *Phlogophora empyrea*, and *Noctua ditrapezium*, have all been found, and some of them in considerable numbers, by the indefatigable perseverance of our collectors. We believe that others are known, though not generally, in consequence of the precaution rendered absolutely necessary, of not publishing the localities of rare species, by the wholesale extermination system of those who advertise for insects by the gross. Thus we have very good reason for believing that *C. dispar* is not extinct. *Limacodes asellus* was taken last year by hundreds. Mr. Battersby found that beautiful insect *Acontia luctuosa* both last year and this, in considerable numbers, and we reported in our last, his capture of several specimens of *Micra Ostrina*, an insect only known to have occurred once before in England, and that single specimen at Bideford, in 1825. In our last number, Mr. Dorville recorded the capture of *D. Livornica*. All this proves that entomology is progressing in this country; for the discovery of rare insects (though isolated cases may be accidental) in a multiplicity of species, shows increased diligence and interest in the science on the part of our collectors. It is worthy of note also, that these discoveries, not only among the Lepidoptera, but other families in Entomology have been made by the hard-working collector who studies in the fields and woods.—ED.

Double-broodedness of the Notodontidæ.—Is it not probable that further light will be thrown on the question of the Double-broodedness of the *Notodontidæ* until additional facts are supplied; and certainly the advocates of the *annual* development only, have offered little else than opinions. I secured a supply of fertilized eggs of both *N. dictæa* and *P. palpina*, amply sufficient to enable me to breed the insects both in the "normal" and "abnormal" state; the young larvæ are feeding well, and I hope to be able in some measure to supply the want. I find the casualties in the natural state very great, especially while the larvæ are young. Mr. Chapman, of Glasgow, privately remarks that it is not a matter of much moment, whether certain insects are single or double-brooded, and I agree with him; but it is most interesting to know, whether being taken from their native haunts and bred in confinement, as it is termed, will produce such a remarkable change in their economy. Had Mr. Greene produced facts in support of his assertion that this change does take place, it would have added to our knowledge; but mounting his hobby "abnormal," he charges all who think otherwise, without offering a fact in return. Will he draw the rein for a moment, and explain to us how it is that, while according to his theory the *Notodontidæ* are so readily affected,

yet no amount of coaxing, forcing, or cooking has any influence on such insects as *C. Jacobea*, *O. pudibunda*, *L. Monacha*, *E. lunestris*, *D. ceruleocephala*, and a host of others which we know to be single-brooded in a normal state? As Mr. Greene himself says, I pause for a reply. The failure on the part of the advocates of single-broodedness to produce facts, has not been without its moral advantages; it has caused a searching into insect life by young and old; the mind has been elevated from the miserable acquisitive desire to possess and accumulate specimens, to the study of nature herself, and it is pleasing to know and learn, that many fair friends and companions have eagerly joined in this research, sharing a fount of pure pleasure. These "incipients" are astonished to find how little they knew, and, like ourselves, yet know, of the wonders of nature in general, and of insect life in particular, and how imperfectly they have hitherto understood how heartfelt were the expressions of the sacred writer, "Oh Lord, how manifold are Thy works! in wisdom hast Thou made them all: the earth is full of Thy riches." "He hath established them for ever: He hath given them a law which shall not be broken." "Whoso is wise will ponder these things."

Speaking of the rapid growth of larvæ, I had eggs of *P. palpina* hatched June 8th., larvæ spun 27th., namely, nineteen days. They really fed only eighteen days.—G. GASCOYNE, Newark, June 19th., 1858.

Nomenclature of Insects.—With reference to the reply given to my quære in the June number, by Mr. Bree, I was already aware of, and possess most of the lists enumerated, but I was in hope to have heard either that there is, or is likely soon to be published, a "full and complete" catalogue of the whole of the British insects, if not of the foreign, as far as may be. At least we are all, as I said, at sixes and sevens. The British Museum lists are exceedingly well done in themselves, but inasmuch as they only contain the names of the species possessed by the museum, they are completely useless for any other collection, for almost hopeless as it may be for any private person to look for so large a collection as that possessed by the National Museum, every one hopes to have every species, and if he has arranged only for a complete number, every addition finds the space for it already pre-occupied. Besides all which, the British Museum lists are in much too large a sized print, so that they not only do not look well in themselves, but mar the uniformity which there ought to be in a cabinet, if arranged partly by them and partly with any other lists, (always in much smaller type.) Dawson and Clark's for instance. Dawson and Clark's list, mentioned by Mr. Bree, is excellent as far as it goes; I only wish that it contained the whole of the Coleoptera. So is Stainton's list of the *Tineina*. Doubleday's new edition of the Lepidoptera will also, I have no doubt, be as good as the former one was at the time. But what is wanted is a new "Stephens" or "Curtis." Of course I do not mean a reprint of their old editions, but a list on the plan of theirs, comprising the whole of British entomology. I think such a catalogue would pay, especially if printed with a wider margin against each column for notes, dates, etc., even perhaps to the extent of there being only one printed volume on each page.—F. O. MORRIS, Nunburnholme Rectory, July 2nd., 1858.

[If Mr. Morris will examine his museum lists, he will find they are complete lists either of British insects or the entire families. The letters B. M. are placed at the end of those species in the national collection. However desirable it may be to have a complete list of Insects, I sincerely hope that no attempt will be made to publish a work of the kind hastily. *It cannot be done by one man*, and surely the best way to attain such an object is to wait until the *workers*, in their several departments, have thoroughly investigated their branches of the science. What Waterhouse, Clark, Dawson, and Walker, have done for the Coleoptera in the last, I may say, few months, there is not much doubt will be effected in the other orders in due time.—ED.]

Arctia caja.—In the February number, Mr. Greene speaks of this insect as being rarely met with in the imago state, in his part of the country, but the contrary has been my experience in other districts. I have on different occasions taken it on the wing, and have repeatedly met with it during the day-time lying *perdu*; most commonly in strawberry-beds, when the fruit is ripe, to which the colour of the under wings of the moth much assimilates. A short time ago when shewing my collection to two of our national school boys, one of them instantly pointed to the row of large Tigers, and remarked of them that they were common.—F. O. MORRIS, Nunburnholme Rectory, June 26th., 1858.

A Curious Fact in Entomology.—The schoolmaster of this village, who I am happy to say has, as well as a son of the person with whom he lodges, become imbued with a love of Entomology, originally, I fancy, from one of Stainton's "Educational Sheet of Butterflies," I had put up in the school, went out mothing last week to our wood, and at or after nine o'clock at night, took a fine specimen of *Thecla W-album*, at his sugar on a tree.—Idem.

Acidalia Blomeraria.—In the month of June the Rev. R. P. Alington, who was staying the week with me, took a fine specimen of this moth, "just out," in our Bront Wood—a new locality; but it has, I believe, been already taken in Yorkshire, namely, at Howsham Wood, by my friend the Rev. G. R. Read. When first seen it was perched on the trunk of a large yew tree, but flew off and was captured. I have looked for others since, but without success.—Idem.

Capture of Sphinx convolvuli.—I had the good fortune to have brought to me, on Saturday, July 10th., a magnificent specimen of *S. convolvuli*, a male, taken in a garden resting on a piece of wood. I have also taken, during the last fortnight, on the wing, off one honeysuckle, between nine and half-past nine o'clock, fine specimens of the following:—*S. ligustri*, seven; *C. elenor*, one female and four males; *C. porcellus*, one male; *M. stellatarum*, seven males and one female.—ARTHUR L. SIMPSON, Stowmarket, July 12th., 1858.

Cucullia chamomillæ.—A larva of this insect was taken by Mr. Joseph King, in a field near this town on the 11th. instant, feeding on the Wild

Chamomile, (*Matricaria chamomilla*.) We believe this is the first instance of this insect being taken in the county of Suffolk.—ED., Stowmarket, July 12th., 1858.

Odynerus parietina.—At the beginning of June, 1857, as one of my daughters was sitting at work one morning at the open window, a female of this mason wasp flew in, carrying a lump of moist clay in its mouth. It proceeded to enter a cotton-spool which was lying on the table, and having remained a few minutes re-appeared minus the clay, and flew out of the window. It soon, however, returned, laden as before, and was going to re-enter the spool, when my daughter caught it, took away the clay, and threw it out of the window, which she closed. The following morning, however, at the same hour, the wasp again appeared with her lump of clay, and made her way as speedily as possible into the spool. She was now allowed to pursue her labours unmolested, and set to work at once to construct a cell. Having deposited an egg, and filled the cell up with benumbed caterpillars, she proceeded to make another in a precisely similar manner. The spool just held three cells. She then neatly closed the spool up, and took her final departure. At the beginning of June of the present year, 1858, three wasps, two males and one female, made their appearance out of the spool, at an interval of two days each. I kept the female several days, and fed her upon moist sugar, which she appeared to relish. From ten o'clock, a.m., to four o'clock, p.m., she was very lively; but at four, p.m., she regularly turned into the spool, where she remained till the following morning.—W. BAKER, Battisford, Suffolk, July 12th., 1858.

Colias edusa.—On June 3rd. my son saw a fine specimen of this insect at Battisford, but was unable to catch it.—Idem.

A. atropos.—On June 20th., a fine specimen of this *Sphinx* was taken on some pea-sticks at Battisford and brought to me.—Idem.

S. convolvuli.—On July 3rd., a female of this insect was taken in a cottage garden at Battisford, and carried to Mr. W. Baker, of that place, an entomologist of long standing. He strapped it alive on his setting-board, where it soon began to lay eggs. By Sunday night it had deposited between fifty and sixty eggs; it then died. Mr. Baker has most kindly presented the eggs to me. They are not yet hatched, but will soon, I hope, produce a goodly brood of young *Convolvuli*. In size, colour, and appearance, they so closely resemble the eggs of *C. vinula*, that, had I not known to the contrary, I should have supposed them to be laid by that insect.—H. H. CREWE, July 12th., 1858.

Bee Taming.—On Wednesday a swarm of Bees from a neighbouring apiary, settled upon the window of a shop in one of the leading thoroughfares in Morpeth, and by the attention which they excited, threatened to cause some obstruction to business in that part of the town. The master of the shop, however, who possessed some knowledge of Bees, in the

course of a very short time had the entire swarm rendered perfectly quiet and manageable by the application of chloroform. Having by this ingenious device been made completely harmless, they were carefully parcelled up and delivered to the owners. It may not be generally known that by the application of chloroform, Bees may be rendered innocuous, and while in this state, that the honey may be taken from them—a process which, it must be allowed, is much less revolting than the common practice of destroying them altogether.—*Northern Daily Express*.

[Having been for some years a subscriber interested in "The Naturalist," I send the above for insertion, hoping that some of your readers may be able to inform the public how the application of chloroform should be made to be effective, and thus save the lives of thousands of these most interesting and useful insects.—ISAAC HARTAS, Wreton Hall, Pickering, Yorkshire, June 26th., 1858.]

LIST OF SHELLS
FOUND IN THE NEIGHBOURHOOD OF WATERFORD.

BY MR. J. FAYLE.

- Cyclas cornea*.—Common.
C. lacustris.—Ballynakill, Newport's Pond.
Pisidium pulchellum.—Common.
P. nitidum.—Rare.
P. amnicum.—Kilmacow.
Unio margaritiferus.—Kilmacow.
Paludina stagnorum.—Ballynakill.
Bithynia tentaculata.—Common.
Valvata piscinalis.—Mill Pond at Kilbarry. Rare.
V. cristata.—By the Cork road. Rare.
Arion hortensis.—Common.
A. atur.—Common.
Limax agrestis.—Common.
L. arborum.—Common.
L. flavus.—Common.
Vitрина pellucida.—Pretty common.
Zonites cellarius.—Common.
Z. alarius.—Not common. Cromwell's Rock, Billinamona.
Z. nitidulus.—Common.
Z. purus.—Gall's Rock, Snow Hill. Not common.
Z. radiatulus.—Common.
Z. nitidus.—Rare.

- Z. excavatus*.—Rare. Snow Hill, Ballygunner.
Z. crystallinus.—Common.
Helix aspersa.—Very common.
H. nemoralis.—Common.
H. virgata.—Common. Woodstown, Tramore.
H. caperata.—Common.
H. ericetorum.—Common. Tramore, Woodstown.
H. rufescens.—Common.
H. hispida.—Common.
H. concinna.—Common.
H. aculeata.—Not common. Tramore, Ballygunner.
H. fulva.—Pretty common.
H. pulchella.—Newtown. Common.
H. rotundata.—Common.
H. umbilicata.—Common.
H. pygmæa.—Rare. Ballygunner.
Bulimus acutus.—Very common at Tramore.
Pupa umbilicatus.—Common.
P. muscorum.—Tramore, Woodstown.
P. Anglica.—Common at Tramore near the Metal Man; also at Ballygunner, and near the Ferry.
P. edentula.—Rare.
P. pygmæa.—Common. Newtown Estate.
P. substriata.—Ballygunner, Tramore. Rare.
P. antivertigo.—With *P. Anglica*.
P. pusilla.—Tramore, Woodstown. Rare.
Balea fragilis.—Common.
Clausilia nigricans.—Common.
Zua lubrica.—Common.
Achatina acicula.—Rare. Newtown estate.
Succinea putris.—Common. Kilmacow, Kilbarry.
S. putris, var. *gracilis*.—Common.
Physa fontinalis.—Common.
P. hypnorum.—Common.
Planorbis albus.—Newport's Pond, Kilbarry.
P. nautilæus.—Newport's Pond. Common.
P. marginatus.—Common.
P. vortex.—Common.
P. contortus.—Common.
P. nitidus.—Common.
Limneus pereger.—Common.
L. pereger, var. *lineata*.—Newport's Pond.

- L. pereger*, var. *acutus*.—Newport's Pond.
L. stagnalis.—Kilmacow. Rare.
L. truncatulus.—Common.
L. glaber.—Common.
L. palustris.—Common.
Ancylus fluviatilis.—Common.
Conovulus denticulatus.—Common.
Carychium minimum.—Common.

Newtown School, Waterford, 24, 5 Month, 1858.

SYSTEMA NATURÆ.

BY THE REV. F. O. MORRIS.

(Continued from page 167.)

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| <p><i>Halmaturus dorsalis</i>, <i>Schinz.</i> Macro- <i>pus dorsalis</i>, <i>Gray.</i> <i>Water.</i> <i>Halmaturus Eugenii</i>, <i>Schinz.</i> H. The- <i>tidis</i>, <i>Geoff.</i> <i>Kangurus Eugenii</i>, <i>Desm.</i> <i>Halmaturus Derbyanus</i>, <i>Gray.</i> <i>Schinz.</i> <i>Halmaturus brachyurus</i>, <i>Schinz.</i> Kan- <i>gurus brachyurus</i>, <i>Quoy et Gaimard.</i> <i>Halmaturus fasciatus</i>, <i>Peron.</i> <i>Schinz.</i> <i>H. elegans</i>, <i>Cuv.</i> <i>Halmaturus penicillatus</i>, <i>Schinz.</i> Pe- <i>trogale penicillata</i>, <i>Griff.</i> <i>Halmaturus robustus</i>, <i>Schinz.</i> Macro- <i>pus robustus</i>, <i>Gould.</i> <i>Petrogale</i> <i>robustus</i>, <i>Gray.</i> <i>Halmaturus albogularis</i>, <i>Schinz.</i> Het- <i>eropus albogularis</i>, <i>Jourdan.</i> <i>Halmaturus brachyotis</i>, <i>Schinz.</i> Pet- <i>rogale brachyotis</i>, <i>Gould.</i> <i>Water.</i> <i>Halmaturus agilis</i>, <i>Gould.</i> <i>Schinz.</i></p> | <p><i>Halmaturus conspicillatus</i>, <i>Schinz.</i> La- <i>gorchestes conspicillatus</i>, <i>Gould.</i> <i>Halmaturus antilopinus</i>, <i>Schinz.</i> Os- <i>phranter antilopinus</i>, <i>Gould.</i> <i>Halmaturus Isabellinus</i>, <i>Schinz.</i> Os- <i>phranter Isabellinus</i>, <i>Gould.</i> <i>Halmaturus Binoe</i>, <i>Gould.</i> <i>Schinz.</i> <i>Halmaturus concinnus</i>, <i>Schinz.</i> Petro- <i>gale concinna</i>, <i>Gould.</i> <i>Halmaturus inornatus</i>, <i>Schinz.</i> Petro- <i>gale inornata</i>, <i>Gould.</i> <i>Halmaturus melanops</i>, <i>Schinz.</i> Ma- <i>cropus melanops</i>, <i>Gould.</i></p> |
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PHASCOLOMYS.

- Phascolomys Wombat*, *Schinz.* P.
Wombatus, *Leach.* P. *fuscus*, *Desm.*
P. *Bassii*, *Less.* *Didelphis ursina*,
Shaw. *Wombatus fossor*, *Geoff.*
Fisch. *Waterh.*

ORDO VI.—GLIRES.

FAMILIA I.—PEDIMANA.

CHEIROMYS.

- Cheiromys madagascariensis*, *Schinz.*
Sciurus madagascariensis, *Linn.* Le-
mur psilodactylus, *Schreb.*

FAMILIA II.—SCIURINA.

SCIURUS.

- Sciurus vulgaris*, *Schreb.* *Schinz.*
Sciurus alpinus, *Desm.* *Less.* *Schinz.*
Sciurus italicus, *Bonap.* *Schinz.*

Sciurus capistratus, Ross. *Schinz.* *S.*
vulpinus, Gmel. *Linn.* *S. niger*,
Catesby. *S. variegatus*, *Schreb.*
Sciurus rufiventer, *Schinz.* *S. subau-*
ratus, *Bachm.*
Sciurus aureogaster, Fr. *Cuv. Schinz.*
Sciurus cinereus, *Schinz.* *S. virginia-*
nus, *Bris.* *S. carolinensis*, *Linn.*
Sciurus leucotis, *Gapp. Schinz.*
Sciurus carolinensis, *Schinz.*
Sciurus niger, *Linn. Schinz.*

Sciurus fuliginosus, *Bach. Schinz.*
Sciurus Bottæ, *Less. Schinz.*
Sciurus Douglasii, *Gray. Schinz.*
Sciurus lanuginosus, *Towns. Schinz.*
Sciurus magnicaudatus, *Harl. Schinz.*
S. maerourus, *Say. Gidman.*
Sciurus Audubonii, *Bachm. Schinz.*
Sciurus Hudsonius, *Pall. Schreb. Fr.*
Cuv. Geoff. Desm. Gapp. Richard.
Bachm. Schinz.
Sciurus Lewisii, *Griff. Schinz.*

(To be continued.)

Miscellaneous Notices.

Remarkable Longevity of a Goose.—A very striking instance of the length of life enjoyed by Geese has just come to our knowledge. A Goose in the possession of Mr. Bayley, of Norton, near Wroxeter, in this county, died on Saturday, the 5th. inst., at the great age of forty-three years. The same Goose this year laid nine single and one double-yolk eggs. We are not aware of a similar instance of a Goose living for so long a period. —*Shrewsbury Chronicle*, June 18th., 1858.

A Tom Tit's Whim.—The week before last our Whitechurch correspondent gave an interesting account of a Golden-crested Wren having built her nest in the throat of a dead calf, at Marbury; this week our Ellesmere correspondent has furnished us with the following extraordinary fact:—"In a pump at the residence of Mr. Roe, surgeon, of Ellesmere, may be seen the nest of a Tom Tit about half a yard from the top, containing ten young birds. It is securely fastened round the orifice of the pump tree, but strange to say, the bucket passes through the centre of the nest. The young ones appear to be much alarmed when the piston moves, (which of course it is very frequently doing,) and they scuffle away from it as fast as they possibly can. How the old bird sat her eggs is a mystery, as they must of necessity have been disturbed occasionally around the iron rod when the pump was at work."—*Shrewsbury Chronicle*, June 18th., 1858.

Proceedings of Societies.

East Kent Natural History Society.—(Continued from page 172.)—But the charm of Natural History does not consist alone in collecting speci-

mens. It is said by some to be a cruel science, leading to a constant destruction of life. As far as the true naturalist is concerned, this is a most unjust accusation. He seeks for specimens to study their form, colour, and internal anatomy for purposes of comparison. But with him there is no wanton destruction of life—no sportsman's thirst for spoils. With his knowledge of structural form, come higher and nobler views, and he now endeavours to make himself conversant with their habits and social relations.

Few things are more striking than the migration of birds; yet how little correct information do we possess on this subject. We watch the swallow come and go; but what spirit guides it on its trackless journey?

Is it not wonderful to see the variety of little fragile summer birds—which, from their extremely delicate frames, seem as if a gust of wind would waft them to destruction—coming to build almost within a day of their expected time; and to think how hard their little pinions must work from the time they leave land, till they again set foot upon it.

In this country we have summer visitors, winter visitors, and residents. Those which come to us in the spring, arrive for the purposes of breeding; those which appear in winter, come for food—such as the fieldfare, redwing, snipe, etc., and a few of the latter doubtless breed here, the bulk of them repair to Norway and Sweden for the purposes of incubation. Why the fieldfare and redwing leave us for a northern summer, when others of the same family remain all the year round—such as the common thrush, the missel thrush, the blackbird, etc.—we know not. These are subjects of great interest to the naturalist, and it is only by accurate notes that the mysteries of migration will ultimately be unravelled.

The joyous little harbingers of spring have now arrived, all clothed in their brightest plumage, full of energy and life, redolent in song and in happiness, greeting, as it were, with their vocal music, the native islanders upon whose domains they come to pass the summer months. The great business of their transient lives is now called forth—the continuance of their race.

The birds having paired, suitable places are selected for building their nests; and here, how singularly the habit of the bird is shewn. In the places chosen, the shy and timid, the bold and confident, have marked peculiarities.

The grasshopper warbler builds her nest so as almost to escape detection. Mr. Yarrell remarks, that, "unless the old birds are closely watched, and seen carrying materials for building, or food for the young, the nest is very difficult to find." He mentions one discovered by Mr. R. Wingate, of Newcastle-upon-Tyne, who watched the bird to the distant passage on

the top of a whinbush, by which it entered and left the nest, which was built at the bottom of a deep and narrow furrow, or ditch, overhung by the prickly branches of the bush, and grown over by the thick coarse grass, matted together year after year, to the height of about two feet, all of which he was obliged to clear away piecemeal, before he succeeded in gaining the prize. The nest was composed of coarse, dried grass, and contained five beautifully white eggs, closely freckled with carnation spots.

The martin and swallow seek the humble roof of the poor cottager; here they are almost always protected, and repay with their happy twitterings, the shelter thus given to them.

A curious anecdote of a martin was related to me. It appears that a poor boy had met with an accident and broke his leg. The room in which the sufferer lay being small and heated, the upper part of the window was let down. A martin soon entered; it flew in and out again several times, and finding itself unmolested commenced building against the ceiling. This the birds were allowed to do. The eggs were laid, then hatched, and in due time the young brood took wing. Both the martin and swallow return frequently, if not always, to the same neighbourhood.

A pair of chaffinches, during the last summer, built their nest in the spreading branch of a fir tree in my garden, about four feet from the ground. I watched the parents at a distance, about their task; it was soon finished, and eggs deposited. During the incubation, I went frequently during the day to see the patient little bird sitting on the nest, and would stand within a foot of her. When I found her off, I would scatter crumbs of stale cake round the nest; and as soon as the young birds were hatched, I became more familiar, and both the old and young birds would feed from my hand. Having several workmen about the place, I was pleased to see the interest they took in the novel sight. The old bird at their approach merely left the nest and remained within two or three feet of it, seeming to have lost nearly all fear of danger.

Alas! The fate of my poor little pets was sad indeed. On Sunday morning, the 7th. of June, I went after church, as usual, to feed them, when to my horror I saw the nest torn down, and the feathers of both old and young birds strewn upon the ground. The tale is soon told. A stray cat had unfortunately discovered the nest, and must have reached it easily by springing from the ground.

Some of the birds' nests are exquisite specimens of workmanship. The chaffinch, wren, and long-tailed tit are most neatly and beautifully constructed. Other birds have scarcely any nest, and the night-jar merely deposits her eggs in a small cavity of the bare ground, by the side of brushwood, and then hatches them.

It is during this process that most of our song-birds are in best voice.

“’Tis sweet to be awakened by the lark,
Or lull’d by falling waters. Sweet the hum
Of bees, the voice of girls, the song of birds,
The lisp of children, and their earliest words.”

It is at this time of the year that the ornithologist takes his sylvan rambles with the greatest delight. The woods, the hedgerows, and the fields are alive with song. And as he strolls along, what a pleasure it is to him to recognise by their voices the different warblers of the feathered race. But there is a charm even beyond this.

Birds have great perceptive qualities; they are easily taught and trained, and love the hand that fosters them. Those who have had much insight into the habits of birds, are aware that their tempers vary even as our own. Some have larger capabilities for learning than others.

I doubt not, many present have witnessed the exhibition of canaries in the open streets. A deserter is tried, condemned and shot; a canary pulls the trigger, the prisoner falls dead—but in imitation only, for at the word of command it starts up, and flies to the finger of its patron.

(*To be continued.*)

The Shropshire and North Wales Naturalists' Field Club.—The members of this Society held its first excursion for this season yesterday week, in the neighbourhood of the far-famed “Pistyll Rhaiadr,” about four miles from Llanrhaiadr, when the following gentlemen were present:—The Rev. W. W. How, vice-president; Rev. J. O. Phillips; Rev. D. P. Lewis; Rev. F. W. Parker; Rev. D. Lloyd; Rev. Henry Jones; Rev. D. Evans; and Rev. J. C. Hill; Mr. C. E. Parker; Mr. Roberts; Mr. W. Wilding; Mr. D. C. Davies; Mr. E. W. Thomas; Mr. T. Vaughan; Mr. A. E. Evans; Mr. Lees; Mr. Gwyther; etc.; who afterwards dined together at the Wynnstay Arms, Llanrhaiadr; the Rev. W. W. How, of Whellington, in the chair. The second excursion is fixed for the Breidden-hill, and the third for Llangollen. —*Shrewsbury Chronicle*, June 18th., 1858.

The Retrospect.

WITH reference to Mr. Fuller’s just observations upon my error of latitude and longitude, all I remember is that I gleaned, a long time ago, a large mass of statistics from various sources, and *think that* fact was from a topographical work, which I must have copied mechanically. It is manifestly too erroneous, I hope, to mislead any one; if it did, I fear they would not find Sunninghill!—O. S. ROUND, 19, Richmond Terrace, Westbourne Grove, North, July 3rd., 1858.

NATURAL HISTORY OF SUNNINGHILL.

BY O. S. ROUND, ESQ.

(Continued from page 153.)

CHAPTER IV.

TOWER HILL, forming, as I have said, a point in the landscape, the ground beyond it falls into a number of transverse undulations, but still at a considerable average height above the surrounding country, extending due south-west as far as Bagshot Park—many years the residence of William, Duke of Gloucester, and afterwards of his widow, who in turn left it from increasing age and infirmities; and it was then inhabited by Colonel Seymour for some time, and is now, I believe, vacant. Behind this Park a lofty ridge of heath-hills run towards the south for many miles, another turns at right angles to these, and proceeds due east from the parish of Windlesham, as far as Broomhall, where a monastery of Benedictine Friars stood previously to the Reformation, the site being marked by some ancient yew trees and the marks of a large kitchen,—a never-failing concomitant of religious houses of the previous era. This site is now occupied by a farm-yard and home-stead. The hills then rise considerably to the east, and are clothed with wood, and partly occupied by a small colony of houses, in which cottage and genteel residences are intermixed.

At the foot of these hills, which form the northern boundary of the county of Surrey, runs the Great Western Road, already mentioned; and the high ground at the summit of the ridge eastward, again at right angles, turns due north by Virginia Water and Windsor Great Park, and extends as a sort of distant amphitheatre to Ascot Heath again; and thus, if my readers have had patience to follow me, we come round again to the point from whence we set out. Between Ascot Heath and Hagthorn is the highest point in this district, known as Bol-marsh or Bol-ridge Hill, (I am not certain of the spelling,) probably from the prominent part it takes in the scenery.

The whole of this country bears indubitable marks of having been, probably at the time of the first invasion, a stronghold and encampment of the Romans. Numberless evidences have been discovered of their presence, such as coins, urns, rings, spears, and various kinds of pottery; and one place, called "Wickham Bushes," is covered with barrows, which have almost all been opened, and found to contain the articles above mentioned, and in some instances, human bones. As these mounds were no doubt the mausoleums of this people, we can only refer the circumstance of human remains not being often discovered to the fact of their decay,

which in a very few years returns our bodies to their parent dust, even with all the means that are so studiously taken in this enlightened age, to preserve them, and surely how much more where a mere earthen vase was their only receptacle. For a minute description of these antiquities I refer the curious reader to a work called the "Nerva Britannica," which was published some years since, especially devoted to illustrate and describe these discoveries. Setting this aside, the remains of Roman encampments which are still so obvious in all parts of England, are particularly perceptible here; and no one, on mounting any of the hills which command a view of these evidences, can doubt for a moment that they are not the effect of chance, or of any convulsion of nature, but that they were formed by human art, and for military purposes: indeed this part is known as "Cæsar's Camp," and the road leading from it, as the "Old Roman Road," and so marked in the maps.

Most of the lower parts of these valleys are more or less marshy, and contain some excellent snipe-grounds, a friend of mine, (now, poor fellow, numbered with the dead,) having killed thirty-seven on one Michaelmas Day, in a few hours; but he was a first-rate shot, and happened (as he thought) to light upon a flock, inasmuch as the great proportion were "Jacks." The nature of the soil varies a good deal here, but the change is invariably marked by the different nature of the herbage. It may be laid down, indeed, as a safe rule, that grass will scarcely ever grow on white sand, or heath on loam. All the higher grounds are hence heathy, the hills being generally composed of gravel; but there is a peculiarity in this production, for whilst all the centre rising grounds and those to the south supply the very best *red* gravel, those to the west and north-west yield almost wholly circular pebbles, blue, white, and brown, and some of a large size, mixed with sand, very much like those found at Budleigh and other places on the west coast. These are found to be extremely well calculated for road-making, and are accordingly the chief ingredient.

This soil is well suited to the Scotch Pine and Cluster Pine, which may be said to grow almost indigenously, for there are many considerable plantations having no other origin than the seeds wafted by the winds from others hard by. There are also single trees scattered over the whole moor, and the greater part of the country, which, thirty years ago was a bare common, is now covered with these trees, thereby altering the face of the landscape. The most extensive plantations are those belonging to government and the Bagshot Park estate, which extends for a great many miles to the south-west and west, there being attached to the latter alone ten thousand acres of this species of shrubbery. At Swinley Chase, before mentioned, a paddock of deer is kept for the purpose of supplying the Royal Hunt, whose establishment is situated upon Ascot Heath. These

deer are of the large red kind, and are in best condition in the spring, and then afford, as is well known, very long runs: but time and the march of science must work their way; railways are not safe things to cross, and hounds and horses have at times been run over by a train. The consequence is that for this and perhaps other reasons, the Royal Hunt is not what it was; after a few turns out near Sunninghill, they soon desert us, and go into the Buckinghamshire and Middlesex country. In former times, and indeed so lately as to be almost within the memory of persons now living, numbers of this species of deer were to be found on the wild, but from the open nature of the country, not easily to be approached. I remember, however, very well, when I was a little boy, hearing an old man, (now dead) who had been a notorious poacher in his youth, give an account of shooting two of these animals at one shot from the summit of one of the hills, having crawled upon his face for a very long distance: strange to say, the one lying nearest to him (for they were both lying down) was only wounded, but the furthest was killed on the spot. A second shot, however, despatched the already disabled beast, and they were then covered with heath and grass to be fetched away at night. In this way all the out-lying deer were disposed of, and when the inclosure took place very few were to be found in a wild state.

Under the white sand is usually found clay at a greater or less depth, and there are some excellent veins, and brick-kilns are numerous; and of late an attempt has been made to make ornamental pottery, for which the strongest kind is well calculated. Where the marshes are of any extent, they usually yield peat, and that in great plenty. This is peculiarly the case with Sunninghill Bog. This is strongly impregnated with sulphur, and burns so well that there are many cottages where the fires have not been out for many years. A very remarkable instance of this occurred about the year 1810, when part of this morass during a very dry summer, became, by accident or design, ignited; and from that time for two years continued to burn; ultimately, I believe, it went out of its own accord. Where this fire happened is a large black space to this day, extending to a great depth, and thought to be particularly adapted to the growth of American shrubs. It is indeed neither more nor less than vegetable ashes, and so far, perhaps, capable of absorbing a large amount of moisture; but I think the benefit it imparts, manifested by any manure is very doubtful. Peat is a singular substance, and when it is said to *grow*, we naturally inquire of what is it composed? The poor of Sunninghill have a regular cutting and getting in of what they call their "firing;" and each man has his portion of bog allotted to him, a particular part, of which he cuts, and another portion the next year, and so on, until as he would express it, "the first year's cut has *grewed up*." The peat,

when fresh cut, is composed of moss, roots, rushes, grass, earth, and pieces of wood intermingled, and is very heavy. It is cut in square clods of about a cubic foot, and stacked up in irregular pyramids to dry; when dry they become wonderfully light, and smell strongly of sulphur, in fact their weight arises almost entirely from the quantity of water they contain. Now the question of *growth* is worth considering. Does peat grow; or when a layer is cut off, does not this act as a relief and allow the sub-peat to rise, and with, perhaps, some growth of roots, etc., fill up the vacuum? I merely hint this, for it appears to me that it is, in fact, a thick stratum of vegetable matter, reduced to its present condition by pressure and subsidence, and very much in the condition which we may suppose coal once to have been.

The whole of this line of marsh abounds with the remains of trees, the branches and bodies of which are constantly dug up. Some of these specimens are very large, and I have seen tea-caddies, boxes, and had a walking-stick myself, made of it; this was oak, and as black as ebony; but birch and ash are also found, and there can be little doubt that these extensive morasses occupy the place where once a forest stood, now become subterraneous. How this burial took place can only be conjectured, the great difficulty which arises in the solution of the problem being that most of the trees are found in a prone position. Now it is not impossible to imagine a subsidence, whereby a forest might be overwhelmed, or more properly, submerged, but it would then retain something like an upright condition, or at all events, a horizontal one. Such were the earlier characteristics of this region, and such the alterations which it has at different times undergone. We now come to the inclosure of it by Act of Parliament, and the events which immediately went before that proceeding.

(To be continued.)

THE ENVIRONS OF BATH.

BY THOMAS FULLER, ESQ.

THE Nightingale is now in full song, but we have heard less of that most celebrated of all warblers this season than usual, perhaps from the continuance of north-easterly winds, and the extreme coldness of the nights. Occasionally in sheltered situations his delightful "jug-jug" was to be heard as evening closed in and other songsters were becoming silent, but not in the fullness and sweetness as heretofore. The Nightingale is a very sensitive bird, and when offended with these ungenial winds, either seeks warmer situations or becomes silent. A friend, who dwells in a pretty well-sheltered village about twenty miles from hence, informs me

that he does not remember to have heard them in greater perfection than this year, and observes that he has frequently known them suddenly leave his place for spots more protected from the cold winds prevailing at the time. It is difficult to imagine so delightful a visitor could be unwelcome anywhere, or under any circumstances, but a gentleman who lives a few miles from here once complained to me that the songs of the Nightingales disturbed his rest: how happy would many persons be under such a charming infliction. They are to be heard in many places in this neighbourhood, but the dell I have mentioned is not one of them, although so likely in appearance. I am inclined to attribute the cause to the consequence of the sewage of Weston being allowed to pollute the brook in its course through the village; it is an unfortunate circumstance, and operates very unfavourably in the foul appearance of the stream and offensive nature of the smell. That such an atmosphere is not agreeable to Nightingales I know, from what occurred at a place near Chippenham. The situation was a pretty cluster of trees a short distance from the town, known to be the resort of Nightingales for many years, but upon the deposit of manure of an offensive character near the spot, the Nightingales forsook it.

The grating call of the Land-rail or Corn-crake I first noticed on the evening of the 11th. of May, a few days later than last year; at his first appearance he is not heard till after sunset, but as the grass grows higher and affords more protection, his note is to be heard nearly all day. It is not fitting to say *appearance* in reference to this visitor, for he is never seen, and all attempts to discover him are vain. If you walk in the direction of his cry he is quickly heard from the opposite quarter, and on all sides. He is a perfect ventriloquist; few people about here have ever seen him. I once saw one with a brood of young on the turf at the road-side, but they vanished through the hedge in an instant. The punctual arrival of these birds is remarkable, and attended with more mystery than that of many others, from their incapacity for flight. Their note is said to be more monotonous than that of the Cuckoo; but there are times when even such sounds are pleasing, as happened to me on the evening of the 21st. of May—the hour was late, nearly midnight. Returning home from a visit in the neighbourhood, my path was through the fields; the beauty of the night, and the perfect tranquillity reigning around, induced me to sit upon a stile and contemplate. The fresh breezes which had prevailed throughout the day had disappeared with the sun, and nature was in perfect repose. The moon had passed the meridian, and was hastening to the west, and, being near the full, shone with considerable lustre, casting every object in strong shadow, and defining every point in the surrounding landscape, not a cloud being seen

in the heavens. Opposite to the moon, about the same distance east of the meridian, the planet Mars (now to be seen to great advantage) was shining in all his ruddy brilliancy. Not the rustling or moving of a leaf visible, or breath of air sensible to the feeling; and I cannot help thinking the silence would have been awful but from the note of the Corn-crake. I shall never forget how solitude was enlivened that night by the unceasing cry of that bird.

The village of Kelston joins Weston on the western side. At the junction of the parishes the River Avon makes a bend to the south, and with a bold sweep round west and north, forms a very pretty peninsula with elevated grounds, upon which is a mansion, known as Kelston House, surrounded by a beautiful park and richly diversified woods and plantations. As there is no public road through the domain, the pedestrian who perseveres in following the course of the Avon, will soon find his progress obstructed, and must therefore content himself with as near an approach as he can obtain, and listen to the chorus of the feathered inhabitants of the beautiful groves, whose charming variety of tints are sufficient to interest his attention.

The weather with a few occasional exceptions has not hitherto been favourable for loiterers, but I was so fortunate as to be at the place on one of the few genial days, and whilst listening to the numerous songsters hours passed away rapidly. Blackbirds and thrushes were answering each other; Wood Pigeons were cooing; and the laughing note of the Woodpecker chimed into the chorus. Larks, and many other birds, whose songs my limited knowledge of Natural History did not enable me to recognise, filled up the concert, in which we must not forget the Cuckoo—he was in high note, and very busy flying from one tree to another.

I have often been surprised, and am now quite offended, at the expression, so often repeated, of the note of this bird being monotonous. On this occasion the sound was clear and musical, and chimed in harmonious cadence with the wild natural performers around. The present is the time when his note is the clearest according to the quaint old rhyme. “In May, he sings all day.—In June, he alters his tune.” When the country people say he becomes hoarse because there are no eggs to suck, which clear his throat.

(To be continued.)

NOTES ON NATURAL HISTORY.

IN A LETTER TO THE REV. F. O. MORRIS.

SIR,

I have lived in this colony for more than a quarter of a century, and during all that time I have been, in my small way, an observer of the

habits and histories of the animal and vegetable creation. I have very frequently been sadly disappointed, when reading books of authority on Natural History, at finding such very extraordinary blunders made, as to the most ordinary characteristics of animals; and having possessed your very valuable little magazine, "The Naturalist," from its commencement, and derived much amusement and instruction from it, I determined to write you on this subject, and to offer my poor assistance in arriving at the true history of birds and animals, with whose habits, appearances, and dispositions I am most intimate.

I was led to write to-day more particularly, by meeting in a work on Natural History, with an account of a bird not generally much known, but with whose habits I am very intimate, as it inhabits the savannahs and banks of a creek, (small river,) which runs for a long way parallel with the coast on which I live, and is not found anywhere else, so far as I know, in the colony, though found in numbers on the prairies on the banks of the Orinoco. This bird is the American Horned Screamer; the *Palamedea curnuta*; and called by the colonists the "Mahooka," from its cry, which much resembles this in sound.

This bird I find described as "very like the Spurwing,"—black in colour, with a red tuft on the shoulder. Now one would suppose that there must be truth in this, or whence the description? In reality the only likeness to the Spurwing is in both having two sharp spurs on each wing, inside the shoulder. But in every other respect the birds are widely different. The Mahooka is in size about that of a domestic turkey, or perhaps a little less; black the prevailing colour, with the belly and inside portions of the wings pure white. The outside of the shoulders of full-grown males a clear fawn-colour, marked with brown; the neck prettily marked with minute white spots. The head small in proportion to the size of the bird—very like a peacock's; the beak small and slightly curved. From the forehead projects a horny spike four or five inches in length, like the centre part (rib) of a feather deprived of its flags, quite hard and tough. Having shot birds with this horn in different stages of growth, and one without anything but a germ, I am led to believe that they periodically cast this horn, or perhaps in case of losing it, that they have the power of reproduction.

The great peculiarity of the bird consists in having on the inside of each shoulder, a strong spur or horny substance an inch and a quarter in length, and very sharp. This spur is triangular in shape, and within one inch and a half of it there is a second spur of about half that size.

It is evident that this weapon, or rather that these weapons, are intended for offence, and I myself have observed such use made of them among the birds themselves; but though I have killed very many, and taken many

wounded ones, and had them tamed, I never was attacked in any way by them.

I observed a peculiarity not before mentioned by any authority within my reach, namely, that between the skin and muscles of the body there is much air confined, which crepitates as you hold the bird. The legs are very large in proportion to the size of the rest of the bird, and the toes are still larger in proportion. This is characteristic of all birds living principally on grasses and seeds, in the submerged savannahs of our colony. The Mahooka lives entirely on seeds and portions of young plants, and I never found any trace of fish in the stomach. It lays two eggs, in size and colour resembling those of a goose. Its nest is made from pieces of decayed grass, clumsily formed, on the high grass of the savannah.

It is not at all a shy bird, and is easily shot. When disturbed it flies to the Ita palm trees, where the sportsman can easily stalk him.

This bird is easily tamed, and when slightly wounded can be let loose among poultry with every chance of living, provided there be sweet grass for him to pluck. Brown has expressed his surprise that he has not been domesticated like the turkey. I do not think that the flesh could ever be made so delicate as that of the turkey, even under any care and domestication. In the wild state it is very dark, and deficient in flavour.

Length of bird from beak to end of tail inclusive two feet; height, when erect, two feet six inches. In all illustrations which I have seen he is made very erect. This is a mistake, as in walking the body is kept parallel with the earth. The red tuft on each shoulder is a *pure myth*. And the same authority describes the horn as a "caruncle"—a sad mistake.

Now sir, can you forgive me for taking up so much of your time by my rambling letter. Should you suppose that my long sojourn in this country, and my knowledge of the history of some portions of its natives, could be made available for your little magazine, you have only to write, stating which subjects would be most interesting, and I would have pleasure in meeting your views. I have always been of opinion that the only mode of procuring reliable histories of beasts and birds, is by securing the knowledge derived from personal acquaintance with each subject. I was pleased at observing this well argued in a late number of "The Naturalist," and I am sure that we shall never have any history of value, until all is re-written from such sources. One writer gets information at second hand, which the next confirms, and thus in each history error is perpetuated.

People in different localities are shocked by those inaccuracies, but few ever take the trouble of sending the correct information. I observed lately a gross error in regard to Guinea Pigs. It was stated that there were

none wild in Guiana, though there were in Brazil. Now the fact is that they are in vast numbers here. But I need not enumerate all the mistakes I constantly meet. I have already written too long a letter to a total stranger, whose forgiveness I crave on the score of our common love for the charming study of Natural History.

I am a sugar planter, and live entirely in the country, and have constant opportunity for making observations. Should you at any time feel inclined to write to me, the name subscribed and the place whence I date this will readily find me, and I shall be most happy to afford you all information in my power.

I have lately procured an excellent work on Ferns, native and exotic, and have been classifying some of our very fine ones here. There are not many of them on the coasts, but during each dry season I take a run for a fortnight into the interior, and there they are in great variety. I then also shoot and stuff some birds for my amusement. I can very easily send to you any skin of bird or beast within my reach, and shall have much pleasure in sending any birds' eggs also, if you prize such and name those you would like best.

Your's obediently,

ALPIN GRANT.

Woodley Park, Berbice, British Guiana, June 24th., 1858.

Entomology.

LIST OF LEPIDOPTERA OCCURRING IN THE COUNTY OF SUFFOLK.

BY THE REV. JOSEPH GREENE, M.A., ASSISTED BY THE REV. H. HARPUR CREWE, M.A.,
AND C. R. BREE, ESQ.

[The portions of these papers contributed by Mr. Crewe and Mr. Bree, are signed with the initials C and B respectively. N.B. at the head of a paragraph signifies that the remarks are made after those of Mr. Greene.]

(Continued from page 186.)

10. *D. orion*?—I mention this species only (not having met with it myself) for the purpose of noticing a statement made by Mr. King, (Subst. 220.) He there affirms, that in the year 1853, he took *about* one hundred and twenty specimens of this then very uncommon insect. I do not wish to appear unnecessarily suspicious, but I must say I entertain very grave doubts as to the accuracy of this story. If true, the insect must, of course, be set down as common in Suffolk. I shall be glad to hear what Mr. Bree has to say on the subject.

N.B.—I think there is no doubt but that this is a Suffolk insect. Mr.
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Crewe has taken the larva. As I am called upon by Mr. Greene to express an opinion upon Mr. King's statement on this subject in the "Substitute," and repeated in the March number of "The Naturalist," I have no hesitation in saying that I do not believe a word of it. During the last ten or twelve years I must have sugared some thousands of trees in this neighbourhood, and I never saw a single specimen of *D. orion*. My brother, who lives near the locality mentioned by Mr. King, never saw it at sugar. He has, I believe, taken the larva, but never bred the insect. All we know about this insect entirely negatives the probability of its being taken in the numbers mentioned by Mr. King. I am afraid Mr. K. has multiplied his species by the same arithmetical system by which his four specimens of *E. versicolor*, taken in the same locality, became magnified into forty. (B.)

I beat two full-fed larvæ of this insect August 25th., 1856, in a wood near Ipswich. They were feeding respectively upon oak and birch. The larva very much resembles in appearance that of *L. salicis*, but is of course smaller, and the hairs are longer. I fully concur in the grave doubts entertained by my friends Messrs. Greene and Bree, respecting the accuracy of the story told in "Subst." 220. (C.)

11. *A. tridens*.—Larva by no means uncommon on hawthorn, and pupa (?) under bark on ditto.

N.B.—I think the pupa of this insect is decidedly more slender and delicate than that of *A. psi*. I am utterly unable to distinguish the perfect insects, and shall never cease to marvel that two such dissimilar larvæ should produce such precisely similar insects. The larva is polyphagous on trees and shrubs. (C.)

12. *A. psi*.—Common of course. The perfect insect is fond of resting on the trunks of fir trees during the day.

13. *A. leporina*.—One larva, but so stung as to be almost undistinguishable. It is the only time I ever met with the insect in any of its stages. If any of my readers should have a specimen or two to spare, I should feel much obliged for them.

N.B.—The larva is not at all uncommon in the midland counties, from July to September. Its favourite food-plants are birch and alder, but I have occasionally taken it upon aspen and Ontario poplar, and have known it to be taken on oak. I am strongly inclined to think that the old entomologists were right in making two species, *A. leporina* and *bradyporina*. I have once or twice bred the golden yellow larva, with black dorsal tufts, and the perfect insect has been the pale moth figured by Wood, No. 309, as *A. leporina*. I have not unfrequently, in past years, bred the grass-green larva with snow-white hairs, and the result has always been the moth figured, Wood, 310, as *A. bradyporina*. I should very much like to know whether the experiment has ever been tried on a large scale, and whether both white and yellow larvæ have ever been reared from the same batch of eggs. The larvæ, both white and yellow, turn to a dirty smoke-colour when they wish to spin up. They often eat their way some depth into rotten wood before forming a cocoon. It is very curious to watch them boring their way in. (C.)

14. *A. aceris*.—This insect was not uncommon in the pupa state under

bark on oak trees in Easton Park. I also frequently met with the empty pupa-cases under bark on sycamore trees at Playford.

N.B.—I have beaten this larva off maple, and my friend Mr. H. Bree, off birch. (C.)

15. *A. megacephala*.—Extremely abundant in the larva state. The stubborn tenacity with which they cling to the leaf on which they are feeding, is very remarkable. It does not seem much subject to ichneumons. The pupa may commonly be found under bark on most poplars and willows.

16. *A. alni*.—When on a visit at my friend's, Mr. Bree, a larva of this insect came to him by post. It was sent by his brother, the Rev. H. Bree, and was taken by him at Wolverston, near Ipswich. This insect seems to be scarce in the south, most of the specimens recorded having been taken in the north. It seems to me fairly entitled to be called a really rare species, being apparently uncommon everywhere; and few collectors, I believe, could shew a series of it,—many indeed have no specimen at all, in which unfortunate number I am very unwillingly compelled to rank myself. It seems, nevertheless, to be very widely distributed, as I have heard of its being taken (in addition to Suffolk) in Yorkshire, in the neighbourhood of London, and at Bristol.

N.B.—I am sorry to say that the larva mentioned by Mr. Greene, was stung by a dipterous insect, and died in a few days. This insect has been bred by Mr. Levett, of Finborough, in this neighbourhood, from larvæ found in both instances feeding upon elm; which tree I am induced to think its proper food. (B.)

My brother and I have taken this larva on beech, alder, black Italian poplar, and willow; and in Derbyshire, Buckinghamshire, Herts., and Monmouthshire. I believe it to be polyphagous, and though very rare, universally distributed. It is full-fed towards the end of July and the beginning of August. (C.)

17. *A. ligustri*.—Not common. The dark variety is, I think, rather scarce. I took the pupa in great profusion at Halton, in Bucks., and bred it in the proportion of about one in twelve. The beautiful gloss soon fades.

N.B.—Did any entomologist ever take the larva of this insect upon privet? I never did, but have found it in profusion upon ash, in Bucks. I think *A. orn*i would be a far more appropriate name. I beat a full-fed larva, July 16th., this year. Is not this unusually early? I once beat a small larva from hazel, fed it up upon that tree, and bred the perfect insect. It is scarce in this neighbourhood, (Stowmarket.) (C.)

18. *A. rumicis*.—Decidedly scarce. A few larvæ feeding on willow. My friend Mr. Chapman kindly sent me some larvæ from Scotland. The perfect insect did not differ in any respect from its English brother, except in being rather darker and more glossy.

19. *L. conigera*.—Rare. On nettles once or twice, that is, the perfect insect, not the larva. I may take this opportunity of stating that I have found the common nettle one of the most attractive baits for moths of all orders. I have mentioned hereafter most of the insects taken in this way; and though none of them are rare, the hint may be useful to the beginner. They are found with a lantern, just after dusk, for about an hour.

N.B.—I once bred this insect from some larvæ taken by my brother in Radnorshire, feeding upon nettle. He told me that they resembled the larvæ of *A. triplasia*. I had the pupæ but did not see the larvæ. I have taken this insect flying over flowers in the hottest sunshine, and also by putting a candle at my bed-room window, and at sugar. (C.)

20. *L. lithargyria*.—Common at light, and on nettles at Brandeston. Rare at Playford.

N.B.—I took the larvæ of this insect in great profusion in Hants., in 1856, during the month of May, by examining the grass at the edges of the ridings in the woods by lantern light. The dark dorsal line alluded to by Treitschke, and copied in the Manual, is rather a series of oblong black spots. All the larvæ I found were feeding upon grass. I never saw a single one upon any other plant, though there were numbers amongst the grass. This larvæ closely resembles that of *N. xanthographa*, but may always be distinguished by its reddish colour and larger size. (C.)

21. *L. comma*.—Rare. At light.

N.B.—This insect, which in Derbyshire is one of our commonest insects, I have scarcely seen in Suffolk. I have found the best plan of capturing it is to stand in the long moving grass, and catch it as it flies in profusion over the flowers. It comes pretty freely to sugar, and is also very partial to the blossoms of the rhododendron. (C.)

22. *L. impura*.—Common at light, and on nettles.

N.B.—I took the larvæ in profusion by lantern light in company with those of *L. lithargyria*, feeding upon grass. They crawl up the blades to feed as soon as it gets dark, but completely conceal themselves during the day. (C.)

23. *L. pallens*.—Common at light, and on nettles.

(To be continued.)

A LIST OF THE INSECTS OBSERVED IN THE SOUTHERN PART OF THE COUNTY OF SUSSEX.

BY W. C. UNWIN, LEWES.

(Continued from page 160.)

No. V.—INCLUDING MUSCIDÆ, CESTRIDÆ, VESPIDÆ, AND MELLIFERÆ.

MUSCIDÆ.—LATREILLE. (IN CONTINUATION.)

* *Stomoxys calcitrans*.—Common. Very troublesome in August.

S. stimulans.—Common. In August generally.

Anthomyia pluvialis.—A very distinct and common species, and commonly found on the trunks of trees in early spring; I have particularly noticed it on those of the ash.

A. canicularis et manicata.—Both common. I have observed many others of this genus, which we are unable at present to discriminate.

* From "*Stomoxys calcitrans* to *Tetanocera Hieracii*." These with the inclusive should have been inserted immediately after *Musca maculata*, (page 159,) the error having occurred by a misarrangement of the M.S. copy.

MUSCIDÆ.—LATREILLE. DIVISION II.—ACALYPTERES.

Scatophaga stercoraria.—Abundant on dung everywhere.

S. medaria.—Not uncommon. Frequents the sallow blossoms in early spring.

Sciomyza pallida.—Not uncommon in the neighbourhood during the summer months.

Leria serrata.—Frequents windows, and oftentimes obtained by sweeping in the evening, also observed on the leaves of plants in May and June.

Dryomyza flaveola.—Of frequent occurrence near Landport, on the leaves of hedge shrubs, in July.

Tetanocera Hieracii.—This pretty little insect is very common on a moist bank by Landport, near Lewes; and to be found amongst the tangled herbage by using the sweeping net.

Opomyza combinata.—Occasionally found among the grass and herbage around the hawthorn bushes on the Downs.

Phytomyza notata.—Found with other small species of *Diptera* among grass, by sweeping.

CESTRIDÆ.—LEACH.

Gasterophilus nasalis.—This species was taken rather plentifully by a friend at Firle, in 1854.

Doliphus vulgaris.—Both male and female most abundant on the blossoms of the Cow Parsnip, (*Heracleum sphondylium*,) in July.

Bibio marci.—Abundant everywhere, and may be observed hovering in the air beneath the foliage of large trees in lanes, particularly on sultry days; appears usually in May.

B. flavicollis.—Not uncommon on *Umbellifera*.

I have now completed my list of the *Diptera* of this district, as far as my knowledge of the species permits me satisfactorily; and although but a faint outline of its production in this order, (as I stated in my prefatory remarks, it has no pretensions to perfection,) still it represents generally some of the most beautiful, most conspicuous, and most generally distributed species. Many others have been observed of the more obscure and difficult genera as *Anthomyia*, *Tachina*, etc., and which it is hoped will at some future time be added to the list. It is a matter of regret that we but so rarely meet with an entomologist or collector who appears to take any interest whatever in this order, and yet surely this beautiful tribe of insects is worthy the attention and admiration of the young collector at least, some of the species being equally as beautiful, and equally as interesting in their habits, as the gaily-coloured butterfly or delicately-pencilled moth. They are the constant companions of our summer rambles, and enliven and cheer us with their lively and active habits. Until very recently we had no work which treated fully on this subject, but that blank is now amply filled up by Mr. Walker's valuable volumes in "Insecta Britannica"—*Diptera*, whose nomenclature and arrangement I have adopted.

Passing on from this order, I now introduce a list of the *Aculeate Hymenoptera* which have been observed within the prescribed district; the habits and economy of which are most interesting. These industrious and ever busy little creatures have engaged my especial attention for several successive

summers, and the more I become acquainted with them the more I admire their sagacity and instinct; although at present I am not in a position to record an equal number of the wild bees to that by the late Rev. Mr. Kirby, within a given locality. It is related in his "Life," page 195, that, "the total number of *Melitte* described is one hundred and eleven; of these eighty-three were taken in Barham. Of the genus *Apis* one hundred and twelve; of these seventy-one were found in Barham;—thus making a total of one hundred and fifty-three distinct species of wild bees found in a parish containing one thousand five hundred and seventy-three acres of land." Our Downs are particularly favourable for the *Bombi*, and we possess more than two-thirds of the indigenous species, and all the *Apathi*. In conclusion I would remark that I have taken both Mr. Kirby's "Monographia Apum Angliæ," and Mr. Smith's "Monograph of the Bees of Great Britain,"* as my text books, this latter more particularly, and whom I have followed in my arrangement; it is a work which cannot be too highly commended, and ought to be in the hands of every student. I would also hope to see this list followed by similar ones from other localities, and also to know that the study of this beautiful and truly intelligent tribe of the insect world is daily increasing, particularly among the rising generation of entomologists.

VESPIDÆ.—WESTWOOD.

Vespa crabro.—Rarely and locally met with, more frequently in houses than elsewhere in August and September.

V. vulgaris.—Very abundant some years, generally distributed; the females, it is well known, appear in early spring, and the gardeners in this neighbourhood usually offer a good reward for every individual which may be destroyed.

V. rufa.—I have never found but the female of this species, and that but rarely; and I believe it does not appear to be so common generally as *V. vulgaris*, and its societies are less.

V. sylvestris.—More common than the last species; the nest is a very beautiful object when constructed in a fir tree.

MELLIFERA.—LATR. FAMILY I.—ANDRENIDÆ.—LEACH.

SUB-FAMILY I.—OBTUSILINGUES.—WESTWOOD.

Colletes succincta.—Rare; found near Brighton in July.

Prosopis annularis.—Rare; near Hove, on the coast, on the flowers of *Sinapis arvensis* in June.

(To be continued.)

EXTRACTS FROM SMITH'S CATALOGUE OF BRITISH HYMENOPTERA.

In order to give our readers a greater interest in British Bees, we shall occasionally extract from Mr. Smith's admirable little work, "Catalogue of British Hymenoptera," some of his remarks upon the habits of the principal genera. We hope this will induce them to purchase this model of a monograph.

* Catalogue of the Bees of Great Britain, in the Collection of the British Museum. By Frederick Smith, M.E.S. Price 6s.

FAMILY I.—ANDRENIDÆ.

GENUS COLLETES.

THE economy of the insects which compose the present genus has been frequently quoted from the interesting history given by Reaumur, who found them constructing their burrows in the interstices of stone walls—the spaces between the stones no doubt being filled with earth or some soft kind of mortar; they are found burrowing in light sand-banks. One species, *C. Daviesana* of Kirby's MSS., is extremely abundant in many sandy districts, particularly in the county of Kent; where, as I learnt on having an opportunity of examining Mr. Kirby's own interleaved copy of "The Monographia," he himself had observed it, near Maidstone. The burrows of these insects are from eight to ten inches in length; they are lined at the further end with a very thin transparent membranaceous coating, resembling gold-beater's skin: the insect having stored up a sufficient supply of pollen and honey in a semi-fluid state, closes up the cell with a cap of the same substance as the lining of the tube; this cap is stretched flat across, like the parchment on a drum-head; a little within she next constructs a concave cap, serving as the end of the cell; her former labour is then repeated until she has furnished six or eight cells, when the whole is completed. There is little doubt that the same bee constructs more than one of these tubes, as there never appears any trace of a second tunnel running into the first, as may be observed in many other species of solitary bees, particularly *Halicti*, *Andrenidæ*, and *Anthophoridæ*. These bees are subject to the attacks of two parasites, one feeding upon the larvæ, the other upon the pollen; the first is a Dipterous insect, *Miltogramma punctata*; these flies are very frequently to be seen entering the burrows of the bees, and have been often bred from the cocoons of *Colletes*; the second parasite is the beautiful little bee, *Epeolus variegatus*, which has been very frequently reared from the cells of *Colletes*.

These bees are gregarious, forming large colonies, particularly the *C. Daviesana*; and although their numbers are to some extent reduced by the parasites named, still their destruction by these means sinks into insignificance when compared to the wholesale slaughter committed upon them by *Forficulæ*; these omnivorous enemies devour indiscriminately pupæ, larvæ, or pollen; and in some situations they abound to such an extent, that not less than three-fourths of the bees perish through the attacks of these destructive insects.

There are four known British species of this genus, the type being the *Apis succincta* of Linnæus: the authentic specimen is preserved in the cabinet at the Linnæan Society's Museum.

GENUS PROSOPIS.

THE bees of which the present genus is composed, being destitute of the usual apparatus for collecting pollen, were long regarded as belonging to the family of parasites. Some years ago two of the species were bred from bramble sticks, the larvæ having been exposed and found to be arranged in the same regular order as in the acknowledged industrious, or working species: this observation was made by Mr. Thwaites in 1841. Since that time I have re-

peatedly bred them from a similar nidus. But all doubt of their habits has been removed by the observations of Mr. Sidney Saunders, who has bred an Albanian species in great profusion: they construct their cells in bramble sticks, which they line in the same manner as *Colletes*, with a thin transparent membrane, calculated for holding semi-liquid honey, which they store up for their young: the Albanian species were usually much infested by a *Stylops*. I had a very interesting nest of one of these bees given to me: the bee was observed to have chosen a hollow piece of flint stone, on breaking which a number of the silken cocoons were found, some containing perfect bees when received. Mr. Walcott has in his collection two specimens of this genus of bees, which have apparently been attacked by a species of *Stylops*; the fact has not been previously observed in this country, but in the "Transactions of the Entomological Society," vol. i., new series, p. 58, will be found an interesting account of a species of *Stylops* which attacks *Prosopis rubicolia*, found by Mr. S. Saunders, in Albania.

(To be continued.)

EXTRACTS FROM A LETTER
RECEIVED FROM A CLERGYMAN, RESIDENT, A FEW
YEARS AGO, IN ONE OF THE ISLANDS
OF THE ESSEQUEBO, BRITISH GUIANA.

COMMUNICATED BY C. R. BREE, ESQ.

"FANCY me just mounted on my horse and starting for a ride across the island, in spite of a vertical sun. Quietly I proceed down a narrow road,—half grass, half path, deep dykes on either side, shelving off abruptly—on one side rows of trees, covered with fruits in various stages of perfection, forming something like a shade; on the other a thick bush, that is, trees, shrubs, and parasitical plants,—creepers and climbers, some of great beauty, ascending to the tops of the highest trees, and hanging down again to the very bottom in the wildest and most graceful festoons,—wantoning in luxuriance. Through this bush, which is here but a narrow slip, occasional glimpses of this most glorious river may be seen, rolling into the ocean at about four or five miles an hour. About four miles off, another island, equal in size to this, and beyond it, again, the mainland, stretching far into the west, may be seen. As I proceed my attention is arrested by a noise above. I look up, and behold a large flock of parrots on their way to their feeding ground. Suddenly, again, my horse makes a start, and almost throws me on his neck. I look down, and see a large guana, one of the lizard tribe, darting rapidly through the dyke into the bush, its beautiful and gorgeous colours flashing and sparkling through the waters. In vain I urge my dog, a beautiful spaniel, in pursuit; he barks, and jumps upon my horse, or springs into the water to cool himself, looking up into my face with the most provoking indifference.

I rein up my steed, and proceed. Again he snorts and backs, while a large snake, here called the coral snake, beautifully-coloured, with head erect

swiftly trails its length to the bush, and disappears from sight. Onward we go. A peculiar humming noise next attracts my attention, and lo! the least wee bird imaginable, with beautiful plumage, is seen with its long bill extracting honey from the flowers, upon which it does not even rest, supporting itself in the air, its wings vibrating, and producing the peculiar sound from which it derives its name. My butterfly-net is in instant requisition, but I miss my aim, and the little creature wings its flight to sip nectar on other flowers, and wanton in its enjoyment. Pondering upon my disappointment, my reverie is disturbed just in time to secure some gorgeous butterflies, which almost fly into my face.

I continue to proceed for some miles further on, tempted every moment by a plunge into the water of some animal, or the louder call of some magnificent bird winging its course into the unknown interior. Then, again, my powers are quite inadequate to give you any just idea of the extraordinary beauty of the foliage; the freshness and the brightness of the green of innumerable shades; the leaves themselves of various shapes, exquisitely ribbed, and so varied that one is never tired of examining, and of a size perfectly to astound our liliputian notions of vegetation. The seed-vessels are so remarkably and curiously formed that admiration is never weary. This beauty of the leaves and seed-vessels, and their infinite variety, is a subject which has excited my astonishment as much as anything I have seen in this land of vegetable wonders, and yet, strange as it may appear, I have never seen it noticed by travellers, who, upon these subjects, usually speak in very vague and general language. I have tried repeatedly to preserve some of the leaves in all their perfection, but hitherto, from the exceeding moisture of the atmosphere, without success. The singular and finished manner in which the birds build their nests, also furnishes occasion for remark and wonder; they are generally pendant from the extremest branches, and this to prevent snakes and other animals from molesting their young. They wave to and fro with every breath of wind, and injured by none, not even the strongest, so admirably are they constructed, and really have a most graceful appearance.

A few minutes more riding brings me to one of my schools; and here there is interest of another kind to the thinking and philosophic mind. It is almost impossible to avoid being amazed at the appearance of the little blacks, and their manner of pronouncing some of our words is diverting enough.....Having spent my time here I again take horse and cross the island, through woods rich in beauty, to inspect the progress of my church. Just as I enter a cool glade, with senses keenly alive to the beauties around me, Carlo begins to snuff the air and shake his ears, as if stung by some small insect; on the ground I perceive a well-worn path to an ant's nest, and millions busily at work. I trace them to a lofty tree hard by, and some forty or fifty feet from the ground I observe an extraordinary excrescence, four or five feet or more in circumference, which, after examination, I found to be their nest, in shape and appearance the exact counterfeit of a bee-hive. On other trees I discovered several of these nests differently constructed, but all highly finished; some large, and others smaller.

The ground, too, has its colonies of them, forming towns and cities covering many square yards.

Again I move on, and at some little distance,—aye, is it possible! What familiar sound is this that breaks upon my ear? No, surely it cannot be in the wild and lonely woods of South America! And yet there is no mistaking that sound! It must be my old friend the itinerant knife and scissors grinder! Imagination is now off at a gallop, and beautiful green lanes, village greens, church spires, sweet retired valleys, and the lovely hills of my beloved country fill the mind. To the right hand and left, backwards and forwards, I intently gaze for the solution of my doubts; but nothing human meets the eye. Down, down are all the sweet and thronging thoughts of home; back comes the startling reality, and I find myself in the immediate neighbourhood of a colony of black beetles, called scissor-grinders, from the striking resemblance of their noise to that made by the personage alluded to.

The heat of the day and exercise together have produced thirst and fatigue. I dismount, tie my horse to a tree, and plunge into the bush. A short search brings me into the neighbourhood of the pine-apple, here indigenous. I select one weighing about ten pounds, eat a few slices from it to refresh my body and allay my thirst, throw the rest away, and am again on my route to the church.

I am located in an island about twenty miles 'long by two or three broad, in the mouth of the Essequibo River—a noble stream, here about thirty-five, some say fifty miles broad. Its course is many hundred miles in the impenetrable forests of the unknown interior. The mouth of the river is for many miles thickly studded with islands, some inhabited. The one on which I reside is perfectly flat, and were it not for embankments, would be under water at high tides. A great portion of it is what we call bush, that is, an impenetrable wood. It produces most of the tropical fruits. The roads are bad and narrow, and the country is intersected with dykes for the conveyance of the cane, when cut, to the sugar-houses, in barges. The staple commodity is sugar, which is produced here of the best kind, from seventeen estates, which belong to proprietors who reside principally in Europe. There are a few European mechanics and storekeepers, the remainder of the population, between four and five thousand, entirely black.

With regard to the lately emancipated class, I could write volumes, and hope some day to enlighten a few of our very good people in England, who so largely exert themselves in their favour, with no knowledge but from most exaggerated statements of their condition. They are idle, deceitful, most ignorant, untruthful, and very dishonest, and, above all, notoriously ungrateful. Their wages are high, and half a week's work will earn them sufficient for the support of the whole week, and, moreover, maintain them in comfort unknown to an English labourer. They go into the field when they please, and return when they please. The masters scarcely dare remonstrate, for labour is so scarce that many estates are going out of cultivation."

ON THE DISEASES OF SILKWORMS.

COMMUNICATED BY C. R. BREE, ESQ.

At the Meeting of the "Académie des Sciences de Paris," of June 7th., a very interesting and important paper was read by M. Guérin-Ménéville, entitled "New Observations on the Chemical Characters of the Diseases of Silkworms." The paper is the result of thirty-eight experiments instituted during the last five or six years, and its contents are extracted from M. G. Ménéville's Journal, "D'Observations à Sainte-Tulle."

These investigations are especially interesting to the manufacturing interests of France. In this country we buy and sell and wear our silk—we hear with wonder of a dealer in the commodity leaving at his death a fortune of four millions of pounds; but I am afraid we do not pass many thoughts upon, or institute many investigations into the diseases or economy of the caterpillar, by which all this beauty, usefulness, and riches is produced. But *qui facit per alium facit per se*; and as all our Entomologists are interested in the well-doing of their larvæ, I shall make no apology for giving an abstract of this paper; and I may take the opportunity of remarking that I hope from time to time to give my readers a resumé of the most interesting papers on Entomology, published in the "Revue et Magazin de Zoologie," which is undoubtedly one of the best and most useful Natural History periodicals in Europe.

"In modern days," remarks M. Guérin-Ménéville, "all the diseases of Silkworms are confounded with the epidemic, which has received the name of *Gattine*. Nobody talks of anything else. The *Muscardine* even is nearly forgotten, and it thus happens in regard to this disease as to great epidemics affecting the human species, such, for instance, as Asiatic Cholera.

Having with great trouble procured three or four Silkworms, dead or dying of *Muscardine*, I found that their blood was intensely acid; litmus paper being turned red immediately by it. This redness was removed and the natural colour restored by immersion into the blood of those affected by *Gattine*. The experiment repeated many times during the last few years, always with the same result, demonstrated the acid condition of the blood in the one disease, and its alkaline condition in the other. I have since satisfied myself by many experiments that the blood of Silkworms, affected with the various maladies—*Passis*, *Arpians*, *Luzettes*, *Vache*, *Flats*, etc., is always very decidedly alkaline.

As a result of my experience, I class the diseases of Silkworms under two divisions. 1.—Those resulting from an excess of alkaline matter, which always terminates in a putrid softening. 2.—Those resulting from an excess of acidity, (*Muscardine* and its varieties,) which end in the hardening of the Silkworm, and the development of a fungus growth, (the *Botrytis*.)

It has further resulted from my experience and a great number of observations made in the laboratory and in the cultivated grounds, that the employment of acids is indicated when the worms are attacked by the alkaline disease; that this excess of alkalies proves a general feebleness in

their organism, which is caused by a less substantial nourishment, and propagated from generation to generation. Also that the disease is cured or a favourable amendment produced, by sprinkling the mulberry leaves upon which they feed with vinegar, pure or diluted; with sulphuric acid, diluted with water; or powdering with flour of sulphur, or fumigating with sulphurous acid.

On the contrary the disease called *Muscardine* is cured or prevented by sprinkling the mulberry leaves with liquid alkalis, which will neutralize the acidity of the blood produced by leaves too rich in nutritive matter, or other unknown causes.

My reason for believing that the acid disease of Silkworms is produced by leaves too rich in nutritive matter, is that the disease appears principally when they are thriving best—when the trees have no disease—and it appears on the finest and most vigorous worms. The disease appears most frequently at the moment when the worms are best developed, when their aspect is most promising, and when they devour with avidity the excellent leaves procured for them from the best-cultivated trees.

On the contrary the alkaline nature of the liquids of the worms is manifested always when the vital force is weak, produced by an insufficient nourishment; also when the leaves are diseased, when they are given to the Silkworm too old or too young, the want of proper ventilation, a deficient respiration caused by obstructed stigmata—these are the causes which combine to produce excess of alkaline matter in the blood of Silkworms, and all those which die of this cause, arrive at a condition of putrid decomposition.

This feebleness in the vital functions of Silkworms suffering from alkaline disease is very evident in the worms themselves, and is well known to those by whom they are reared; also the Silkworm is developed slowly, and drags on its existence in a languishing manner; its moult is painful, and often prolonged over several days, and they spin up at different periods.

It is consoling to believe that this epidemic, which is not contagious, has begun to enter into its period of decline; the *Gattine* does not now generally attack worms until a later period than in preceding years, and does not shew itself seriously till after the fourth moult. A great number now recover, while in preceding years all perished."

Nomenclature.—With reference to Mr. Bree's remarks on the British Museum Lists, in the last Number of the "Naturalist," I have referred to those I have by me and cannot see a single B. M. attached to any of the names of species, as stated by Mr. Bree. So again the list of *Diptera* gives only the names of those in the British Museum collection, and does not, as he says, on the title-page, in that instance at all events, even profess to give a complete list either of the whole order or of any of the families in it. The same remark applies to the "List of the specimens of Lepidopterous insects in the collection of the British Museum," as thus stated at least on the title-page and the several other lists. It is only on looking into the prefaces that one sees which do give more than they profess on their title-pages, and which

do not. I find, however, that their other lists, in the shape of nomenclatures, do profess to give the names of all the British species, as those of the *Diptera*, *Anoplura*, *Euplexoptera*, *Orthoptera*, and *Hymenoptera*; but this is only indicated in the preface, and not at all on the title-page, but rather the contrary. Thus if a person orders the "List of the species of British animals in the collection of the British Museum—Part XV., nomenclature of *Diptera*," he will, as Mr. Bree says, have a complete—or *quasi* complete—list of the British species, but if he orders the one with the similar title, "Lists of the specimens of Dipterous insects, in the collection of the British Museum," he will, as I said, have only a list of the species possessed by the Museum; but how is any one to know beforehand by intuition that there are two lists of *Diptera* etc., and that with such similar titles the one gives only what it professes to give on the title-page, while the other gives more? As to any general list being published hastily, I have never recommended any such course, and I think that that notion is hardly to be attached to what I said, seeing that Curtis' list was published twenty-one years ago. If we wait until every species has been discovered and described, we shall wait I think longer than we need: what I advocate is some one's doing now, with the information we at present possess, what Curtis and Stephens did in like manner in their day. As to its being impossible to be done by any one man, "What man has done, man may do," and to come to more "modern instances" than Curtis and Stephens, if my late friend Mr. Hugh Strickland could by himself compile a general list of the whole of Ornithology, Foreign as well as British, why cannot some Entomological Strickland do the like by Entomology, British alone, with all the help he has from others? Who are the workers in all the several departments? How are the public to know that there are workers privately in all of them, and why cannot the results of their several labours be put together? How, moreover, are we to know that they are all at work simultaneously, and will all conclude simultaneously? How, too, can Mr. Bree guarantee that by the time that the last of them has finished, those who had finished before him will not have to begin over again, especially when it is so the fashion to alter everything, to suit the notions and idiosyncrasies of the different writers. I cordially agree with Mr. Bree that Dawson and Clark and others have done their parts well, and all that I wish to express my hope of is that the results of their labours may not be left isolated, and comparatively valueless, but combined as soon as may be with those of others in one general list, like those of Curtis and Stephens, "*Teres atque rotundus*."—F. O. MORRIS.

Hardish Jaws.—We copy the following from the "Report of the meeting of the Académie des Sciences, of June 21st., 1858," in the "Revue et Mag. de Zoologie," for June:—"M. le Marechal Vaillant, at the meeting of the 7th. of September, 1857, placed before the Academy, balls brought from the Crimean expedition, in which larvæ of insects had hollowed out galleries to reside in during their metamorphosis. He now presented a memoir, by M. Victor de Motschoulski, upon the insect which

perforated these leaden balls of the French army in the Crimea. This paper, which contains many details already known to entomologists, is very complete, and full of interesting observations. M. de Motschoulski proves, among other things, that the perforation of cartridges in the Crimea has not been noticed in the Russian army; and that the *Urocerus juvenus* has not yet been observed in the Crimea, and appears in general very rare in Russia. As we have noticed in this review, (in giving an account of the communications of the illustrious Marshal,) M. de Motschoulski said also, that the perforations in the lead were made with the mandibles of the larvæ of the *Urocerus*, in the same manner as all other insects, and simply to form galleries."

Miscellaneous Notices.

Black-headed Gull, (*Larus ridibundus*.)—At half past six, p.m., on the 27th. of June, a flight of thirteen of these birds, followed at an interval of half a minute by a second of six or seven more, passed within a hundred yards of me whilst sitting in the garden, their height being not more than fifty feet above the ground. Feeling surprised to see these beautiful birds *en trajet* so early in the season, and that too through such a smoky atmosphere as that we have within a mile of Leeds, I carefully watched their movements. Their course, which was very direct, and right to windward, was from E.S.E. to W.N.W., passing over the southern part of Temple Newsam Woods, whence I traced them, till they were lost in the smoke between the churches of St. Saviour's and Quarry Hill, in the densest part of Leeds. From Morris's "British Birds" I learn there is a gullery at Twigmoor, near Glandford Brigg, in Lincolnshire, the estate of Sir John Nelthorpe, Bart. This preserve I find to lie almost exactly in the direction, at fifty miles distance, at that from which these birds proceeded, and that if continued the line would pass south of Skipton and north of Lancaster to Morecambe Bay. I first made the acquaintance of these graceful birds, under the name of "Askey's Gulls," "Askew" being so pronounced on the Border, at Pallinsburn, when salmon and trout fishing on the Tweed, Tell, and Beaumont, and have since frequently seen them on their passage through the valley of Craven, where they generally remain a short time, but never earlier than the time specified in Morris's "British Birds;" namely, the end of July or beginning of August. Indeed I have observed them much later than the 12th., but as I am at a loss to account for their early appearance, unless it be from the general precocity of the season, perhaps parallel experiences of some of your contributors may assist me and other embryo naturalists.—EDWARD JAMES MAUDE, Knostrop, Leeds, July 2nd., 1858.

Egg of the Cirl Bunting, (*Emberiza cirrus*).—I have now in my collection a very small egg of the Cirl Bunting, found near this town; measuring five lines and a half long, by four lines and a half wide, or smaller than the Egg of the Golden-crested Wren.—J. T. G. HAWKE, Liskeard, Cornwall, July 30th., 1858.

Proceedings of Societies.

Thirsk Natural History Society.—Botanical Exchange Club.—The monthly meeting of the Thirsk Natural History Society, was held on the evening of Wednesday the 7th. instant. Mr. Peter Davidson, of Thirsk, was admitted a resident, and the Rev. W. M. Hind, of Bayswater, and Mr. H. Ibbotson, of Dundee, corresponding members of the society.

Mr. J. G. Baker, gave an account of an excursion to Halnaby Carr, in search of *Eriophorum gracile*. The locality is a boggy piece of ground, and thickly covered with trees and brushwood, perhaps a couple of acres in extent, that lies about a mile from Croft, on the left hand side of the road to Richmond. He had noticed both the common species of Cotton-grass, but was not able to find that for which he principally went in search. *Ranunculus lingua*, *Pyrola rotundifolia*, *Carex teretiuscula* and *stricta*, were met with, and also *Hypnum nitens*, and a large quantity of *H. Blandovii*, some of it in fruit. He exhibited specimens of these, and also of a *Papaver* with sub-rotund capsule, which he considered to be probably a variety of *dubium*.

Mr. J. H. Davies exhibited specimens of *Tortula papillosa*, recently gathered by himself at Fuller's-court Garden, near Ballitore, County Kildare, and communicated the remaining portion of a paper by Dr. Carrington, on the British *Orthotrichaceæ*. Mr. W. Foggitt exhibited specimens of plants from Newsham Carr, near Kirby Wiske, North Yorkshire, including examples of *Cicuta virosa*, *Ranunculus lingua*, *Rumex hydrolapathum*, *Carex teretiuscula* and *stricta*. *Lemna polyrrhiza* was also noticed at the same locality; and he laid upon the table *Jasione montana*, from Howe Carr, near Sand Hutton.

Yorkshire Naturalists' Club.—This Society, instituted for the purpose of extending an interest in the various departments of Natural History throughout the county of Yorkshire, has, during the past nine years, enjoyed uninterrupted prosperity. At present it numbers nearly two hundred members in various parts of the county, many of whom are eminent for their attainments in various branches of Natural History.

The Society holds its meetings in York, on the first Wednesday in each month, when specimens are exhibited and communications read on subjects

of interest connected with the objects of the Society. The Club has an excellent Library, to which valuable additions are being constantly made to meet the requirements of the members.

We purpose from time to time to report such of the proceedings as we may think of interest to our readers.

At the Meeting held in July last, several interesting specimens were exhibited, amongst which we may notice the following as being of most importance:—A collection of Eggs by Mr. Graham, including the Osprey and Rough-legged Buzzard, from Germany; Reed Warbler, Red-headed Pochard, and Great-crested Grebe, from Wassand, taken on the 20th. of June, by Mr. Graham; the Woodcock from near Retford; the Knot from Iceland; and the Dunlin from Sutherlandshire. Mr. Graham also exhibited some specimens reared from the larva of a somewhat rare insect, *Clostera reclusa*. Some very fine specimens of a rare shell, *Falvata cristata*, taken in the River Foss, near York, by Mr. Wakefield, were also exhibited.

The Querist.

I HAVE shot a Tern which I cannot make out.—Size nearly as big as the Common Tern, but the legs much shorter. Bill *entirely black*; inside and angle of mouth reddish orange; feet brownish red; webs nearly crimson; claws black; forehead and crown white; hind-head and part of hind-neck variegated with black, that colour stretching round the eyes towards the bill; upper parts light greyish blue, tinged with brown on the wing coverts. Primaries, very like those of the Common Tern, but darker, dark grey, the outer web of the outer feathers black, the rest having the inner edges and tips white. The fore part of the back and rump is lighter than the middle. The tail is white, the feathers having their outer webs grey; chin, throat, breast, under parts, upper and under tail coverts, and tibial feathers white. The wings are very nearly, if not as long as, the tail. I shot this bird on Monday last, the 19th., and have since stuffed it, as an addition to my small collection. It was in company with Terns of the Common and Sandwich kind, and seemed rather tame, for it flew low, whilst the others hovered high above, emitting their creaking cries. Its cry seemed shorter, and more like the word 'crak.'—W. B. Wood, Strathairly, Leven, Fife, July 22nd., 1858.

Would any practical entomologist inform a beginner what is the quickest and best way of killing insects.—WILLIE, July, 1858.

[There is nothing so good as chloroform. See the instructions in the "Aphorismata," printed with my "History of British Butterflies."—F. O. MORRIS.]

NATURAL HISTORY OF SUNNINGHILL.

BY O. S. ROUND, ESQ.

(Continued from page 200.)

CHAPTER V.

FEW of the English monarchs of the last few centuries have been addicted to war; if they engaged in it, it was usually from compulsion and not from choice. At all events, although, even as in the case of William the Third, they actually led their armies in person, it was not from a mere love of arms. This was not the case with George the Third; of indomitable bravery and restlessness of spirit, he was a promoter and admirer of warlike achievements for their own sake, and would willingly, nay, was with some difficulty dissuaded from taking an active share in it. Hence the accounts which were constantly reaching England of our conquests and actions abroad were a goad to his valiant nature, stimulating a military ardour which it was impossible for him to satisfy. Reviews, military pageants, and such exhibitions were his delight, and a happy expedient was at length hit upon, which, at the same time that it kept in constant practice the household troops, indulged him to the utmost in his darling propensity. This was no other than the sham-campaign that kept up during the summers of 1795-6, the spot selected being that very district which I have now been describing, upon which twenty-five thousand men, horse, foot, and artillery, were encamped. The ground, from its undulating nature, was every way suited for the purpose, and as the court was resident chiefly at Windsor, it was most convenient for his majesty. Regular plans were laid out beforehand as to the future movements of the army; tents were pitched and positions taken with as much care as if the fate of nations, instead of the pastime of a single individual depended upon the issue; in short, what we have lately seen take place at the camp at Chobham, which is within a couple of miles of the spot, was there enacted on a larger scale, and I have heard a veteran officer, who had witnessed the serious original, say that nothing could be more like an actual field of battle.

During this time the king and royal family came daily to view the proceedings, and a spacious marquée was erected upon King's Beech Hill, one of the highest points of the country. This spot, which is well-known to every one who has ever resided in the neighbourhood, for the extent of the prospect to be seen from its summit, and the consequent beauty of its situation, lies on the very verge of the parish of Old Windsor; indeed the northern half of it is in Sunninghill. At the time I speak of it was crowned by six beech trees, then perhaps a hundred years old, and

as they had no parallel for many miles, formed a most conspicuous point, and were known as "The Beeches." Immediately beneath the trees a small residence, with a cottage attached, had been some years previously built by one Ford, who sold it to my grandfather, who was the owner of it at this period. This cottage was, I believe, the first habitation ever built on the spot, and was inhabited by an old man named Biggs, who gained a precarious subsistence by keeping fighting-cocks, and attending fairs and markets. Living in a lonely manner he obtained among the thinly-scattered population the reputation of having money, and whether well-founded or not, it excited the cupidity of one Stephen Dicker, a notorious highway-man of those days, who haunted the neighbourhood of Broomhall and Urly Wood, as a low ground near was called, and surprising the old man one evening in winter, he beat him unmercifully and left him, believing him to be dead, stealing from the house a gold-laced hat and some trifling articles; but, contrary to his expectations, the old man recovered, and appeared against him at the next Reading assizes, where he was condemned and executed for the crime; and I have seen a copy of the indictment. This was, I think, one of the last of that race of mounted desperadoes for which Bagshot and Hounslow Heaths were so famous.

This hill, under a grant from the crown became our property, and is such at the present day, and here it was that my yearnings after the study of nature were first indulged. Here I became known as a bird-preserved, and it may easily be imagined that scarcely a tom-tit came to grief without being brought to me as a good specimen for "Master Oliver," as old Trapbois said, "for a consideration." Such rarities as were really brought to me, or came under my observation, I shall hereafter refer to.

(To be continued.)

THE ENVIRONS OF BATH.

BY THOMAS FULLER, ESQ.

(Continued from page 202.)

THE note of the Cuckoo was first heard in this neighbourhood on the 15th. of April, since which time I have enjoyed many opportunities of observing him, and am of opinion that his plumage is of lighter shade than at a later period of his sojourn amongst us. The idea might be merely a supposition, suggested perhaps by the contrast in colour from that of the numerous Rooks and Jackdaws, whose sable hues I had for so long previously been familiar with.

The dell mentioned in my last communication, although not so extensive

or secluded as desirable, is less disturbed by visitors than any other spot within reach of a moderate walk. I am therefore content to make the best of it, and even in its limited space manage to find amusement; but it is grievous to say that a mischievous spirit has found entrance, of which there is evidence to be seen at every visit; the following is an instance:—One morning at the beginning of April, soon after sunrise, I was just entering the place, the chorus of songsters induced me to sit upon the gate leading into the field, and listen to the chorus of their varied notes; the grass was loaded with crystal drops of dew, sparkling like diamonds in the morning sun; increasing pleasure was gradually stealing over me, when my contemplations were suddenly roused by sharp painful sounds, and upon looking round saw a ruffian of a fellow striding towards me with a blackbird in his rude grasp; he had just knocked it down with a clod of earth, the blow had struck the poor thing on the head, filling one of its eyes with dirt, which the unfeeling captor was wiping out with a rough cotton handkerchief. With great difficulty I controled my disgust, and mildly remonstrated upon the cruelty of the act, but with very little effect. Another instance came under my observation this afternoon, and the vexation being fresh in my mind I cannot forbear relating it. The day has been remarkably fine, and now whilst I am writing at a window looking to the west, the sun is slowly descending a little to the north of west, at an opening between two high hills, with majestic brilliancy, and the crimson tints of the sky as he gradually disappears in the distant horizon, is a study for the artist, which must be seen to be appreciated—but is there pencil or art capable of pourtraying the liquid fire of the glorious luminary, richer than molten gold. Pardon this digression; the sublimity and grandeur of the scene will excuse it.

I had been to the dell this morning and the beauty of the afternoon induced me to go again. Among the several objects of interest were a pair of Magpies. They had built their nest nearly at the top of one of the loftiest trees; both birds were often seen: but, although so high, they always flew away at my approach. From seeing one only lately I conclude the other was sitting in the nest, which is admirably adapted for concealment, being covered at the top, and entered by a small hole at the side, through which it is surprising how so large a bird can enter. I had flattered myself this pair of birds, from the elevated situation of their nest, were safe from molestation; but the event proves otherwise, for upon my visit this afternoon neither bird could be seen, and the feathers of a Magpie scattered over the grass plainly told their fate.

The Swallows, which appeared here in such numbers on the 11th. of April, went away nearly as suddenly as they came; even up to the 18th., on which day the weather was equally fine and warm, scarcely one was

to be seen; since the 18th. a few more made their appearance, and on the 29th. we had them numerous as before. How is their absence from the 11th. to the 18th. to be accounted for? Was it from a deficiency of food causing them to return southward? Or were they an early detachment, and have proceeded further inland, and those following, new arrivals? We now see the swifts; their larger size, more sombre appearance, and greater rapidity of flight, is seen by an indifferent observer. Those who look with more interest will find great amusement in observing the difference in the motions of the two species. The flights of the Swifts are longer in the same direction, their bodies seem to be floating in liquid air without assistance of their extended wings, the motion of which is a graceful dipping on either side. The evolutions of the other species are more eccentric, with quicker action of wing, and as they wheel round you, alternately presenting their white and dark plumage.

Our friends, the Rooks, since they have accomplished their building operations, have been going on more orderly during the period of incubation. A portion resort to the fields to collect food for their young, and soon as provided return to their nests. They do not caw, for their mouths are too full; frequently one will pass near enough to enable you to observe his pouch as it hangs suspended, like a wallet, under his lower mandible, full of worms and grubs. The young will soon be issuing from their nests, when they are called "perchers," and their appearance is the signal for the beginning of the "Rook-shooting."

(To be continued.)

OUR FEATHERED FRIENDS.

BY O. S. ROUND, ESQ.

"WHAT is a friend? a thing so seldom known,
Yet so familiar an acquaintance grown;
We hear its name at every turn we make,
We must do this or that for friendship's sake.
Vile mockery of a word, whose sacred tie
And spotless name, in no mean compass lie!"

How common a saying is it in every man's mouth, "Oh! a *friend* of mine;" say rather one whom you are acquainted with to speak to, for this generally is the utmost meaning. Friendship depends somewhat on both parties, and the scarcity of true friendship is proved in this, that the least clashing of interest commonly severs the tie, firm as it may be supposed to have been, at once. Some people make friends quickly, and as quickly lose them; others are reserved and have few intimates, but their predilections when once indulged are strong and hasty; others seem antagonistic by nature to all their fellows—modern Ishmaels. I think I

may say, among a numerous acquaintance, I have some real friends; perhaps every one so circumstanced will say the same; but I like besides to have friendships which are, to a certain extent, of my own making, and upon which I can somewhat more experimentalize; I mean with the dumb creation. Among these, irrational as they are, it is by no means impossible or even difficult to induce a sympathy of feeling.

It is admitted that there are many animals which have an intelligence closely bordering upon reason, and there is no doubt that every living creature, even down to the zoophyte, has some sort of perception, for the *Polype* will not fail to withdraw his feelers on the approach of danger. "The ass knoweth his owner, and the ox his master's crib;" and I remember hearing it said that an old man in our village, (Sunninghill,) if his bees got wet, would dry them gently, by rolling them between the folds of a clean cloth. Now, perhaps of all pet creatures, birds are best known to us, and I am sure scarcely one of my readers will fail to call to mind the welcome note which greeted him as he descended to the parlour in the morning. Why should not a bird be as capable of likes and dislikes as a dog or a horse? It will be said that these are gifted with superior intelligence: are you sure of that? They shew it more, but may not that be more in shew than reality; that is, may not birds have as acute perceptions and strong instincts, though they do not exhibit it in their looks. Here they have a difficulty, for although the ruffled plumes and erected crest are indicative of disturbance of some kind, we cannot see the play of the muscles as we can in animals which have no such feathery clothing. But at least in the one instinct of constructing a habitation, they are far superior to all animals, the beaver excepted.

The most important object of their lives, and that which nature has lavished all her gifts upon, is the reproduction of the species; and hence we find in every animal, that this object calls forth unwonted and extraordinary qualities; the timid become bold, the savage gentle, the wild tame; and animals which are apparently gifted with less intelligence than others, display the most astonishing mechanical skill; look even at the insect tribes, and at their wonderful "baby-houses," and yet it is very common to deny them even the smallest perceptions; but here is a great mistake. We even read of a poor prisoner who made friends of the very spiders that spun their webs around his dungeon; and shall we then deny to birds as great a capability of sympathy as these? It were preposterous to deny it; go to our invaluable friend Mr. Kidd, and ask him, and see what a shower of feathery eloquence you will call down; aye, and not mere cloquence neither, for he talks and writes to purpose, and has, as he ought to have, I am sure, a great contempt for those who are disposed to use that epithet towards such pursuits as ours.

I pity from my soul a man who can either look on a bird merely as a specimen, a dish, or an animal. It is like ourselves, but in many respects how superior; a beautiful work of God's creation, aye, most beautiful. I ask but a calm review of the subject to confirm what I say. I know I run the risk of being thought morbid in this matter. I am content to be so regarded; but the disgust with which my constant contact with the world inspires me for everything human, renders it a positive feast to be able to turn to something which has even so negative a quality as mere harmlessness. I go from a crowd of pollution and iniquity, and find myself watching a pretty pair of my feathered friends, chirping in connubial harmony, and tending their callow brood. The contrast, so greatly unfavourable to humanity, that I fear I shall run my head against a wall, to shut out the filthy picture that I must return to. The sage has said, "Go to the ant, thou sluggard." I say, go to the woods, thou grovelling sensualist, and see, if thou canst, the beauty, the happiness of its tenants, and loathe thyself.

Richmond Terrace, Westbourne Grove, July, 1858.

Entomology.

LIST OF LEPIDOPTERA OCCURRING IN THE COUNTY OF SUFFOLK.

BY THE REV. JOSEPH GREENE, M.A., ASSISTED BY THE REV. H. HARPUR CREWE, M.A.,
AND C. R. BREE, ESQ.

[The portions of these papers contributed by Mr. Crewe and Mr. Bree, are signed with the initials C and B respectively. N.B. at the head of a paragraph signifies that the remarks are made after those of Mr. Greene.]

(Continued from page 208.)

24. *H. nictitans*.—Common at sugar, and occasionally flying in the sunshine. Variable.

24.* *N. typha*.—Occurs rarely at Thornham. (B.)

N.B.—I met with seven or eight pupæ, and two or three full-fed larvæ last week, July 20th., at Stowmarket, in the stem of *Typha latifolia*. It is not however common in this neighbourhood. I have noticed that though the larva feeds indiscriminately upon those plants that have flowers, and those that have not, and will sometimes completely hollow out the flower-stalk; it almost invariably forms its cocoon in a plant without a flower. The pupa must be kept very moist, or you will not breed the perfect insect. It is best, if possible, to cut off the stem with the pupa in it, but if it slips out, as it is very likely to do, the best plan is to lay it upon some damp earth, in a tolerably close-fitting tin box. I have seen the pupa so low down in the

stalk, as to be partially submerged in the water. The perfect insect should always, if possible, be stuffed, as it is more subject to grease than perhaps any other moth, and will undergo numberless immersions in *turpentine* and *magnesia* without being cleansed. (C.)

25. *H. micacea*.—Common at light.

N.B.—This insect I have also taken in the hot sunshine at light, and at sugar. It is a most variable insect in size. The females are sometimes gigantic. (C.)

26. *A. putris*.—Very abundant in the pupa state at roots of various trees. Comes freely to light.

N.B.—This larva is very partial to the leaves of the potatoe. It is also very fond of the leaves of *Lamium album*, (the common white dead nettle,) and the stinging nettle, (*Urtica dioica*.) Its pupa becomes a pest to the digger. Though found under trees, I will venture to say it never feeds upon them, but upon the low plants round the stem. (C.)

27. *X. lithorylea*.—Very abundant.

28. *X. polyodon*.—Very abundant.

29. *X. rurea*.—Common.

30. *X. hepatica*.—Very common on nettles and at light. In addition to the description of the larva in the "Manual," I may remark that it has a pinkish tinge, and is covered with small black tubercles. I frequently found it under moss on poplars. The insect was a pest at sugar; it, *Pronuba*, and *Polyodon* constantly engaging in desperate single combats, until overcome by their feelings (a combination of rum, sugar, and excitement) all fell helplessly on the ground.

N.B.—This larva frequently comes to the sugar in the early spring. I have seen it feasting away four or five feet from the ground. It may also be found by lantern-light crawling up to feed on the blades of young grass. (C.)

31. *X. scolopacina*.—To my surprise (having supposed it exclusively a "northern") I beat five fine specimens of this insect from oaks bordering a small plantation near Kesgrave Hall.

32. *D. pinastri*.—Local. I did not meet with it at Brandeston, but took fine specimens off sugar at Playford.

N.B.—Taken at Creting Hills, but rarely. (B.)

This insect is partial to light. (C.)

33. *N. saponaria*.—Very uncommon. One wasted specimen at light.

N.B.—Taken rarely in woods near Stowmarket. (B.)

34. *H. popularis*.—Also rare. At light.

N.B.—The male is not uncommon at light, but if not caught immediately, soon dashes himself to pieces. The female appears to be one of our most uncommon insects, probably from her being sluggish and seldom flying. (C.)

35. *C. graminis*.—Taken at Woolpit wood, near Stowmarket. Not common. (B.)

36. *Cerigo cytherea*.—I generally have taken one or two specimens of this insect annually. Last year (1857) it came to sugar not uncommonly. (B.)

N.B.—I took this insect two or three times at light last year, 1857. (C.)

37. *L. testacea*.—Not common. At light and occasionally beaten.

N.B.—Common at light. (C.)

38. *L. cespitis*.—I took one fine specimen at light in September.

39. *M. anceps*.—Very common. Is very fond of the flowers of the raspberry. Varies much in the intensity of its colouring.

40. *M. brassicæ*.—Very abundant, of course.

41. *M. persiciaræ*.—Also very plentiful. The larva will feed on anything and everything. It has been questioned whether it feeds on trees, but I have once or twice beaten it from oak, and in confinement it eats indifferently anything nearest at hand. It is a handsome insect when bred.

N.B.—No practical entomologist can doubt that this insect feeds upon trees. Elder is its favourite food. (B.)

I have frequently taken this larva on elder, and sometimes upon white thorn, but not upon any other tree. It is very variable in colour, sometimes bright green, sometimes dirty olive, and at others fulvous. The pupa closely resembles that of *H. pisi*. (C.)

42. *A. basilinea*.—Abundant.

43. *A. gemina*.—Common at raspberry blossoms, and light. I found it much more constant in its colouring in Suffolk than in Gloucestershire. In this latter county the varieties were so numerous, as to make it difficult for a tyro to determine the species.

44. *A. unanimitis*.—Tolerably plentiful in the larva state, under moss and loose bark on willows bordering upon streams. As I find from the "Manual" that it feeds upon various grasses, I suppose it merely chose this locality as a convenient place for becoming a pupa.

N.B.—I have taken this larva feeding upon water-grasses, in September and October. It most closely resembles that of *L. impura*, and were they found at the same time, might easily be confounded with it. It as frequently passes the winter in a loose earthen cocoon, as under moss or loose bark, and may be raked up at the sides of ditches, rivers, and canals, in the autumn and winter. I kept some alive all through last winter, in a tin box covered with gauze, and half filled with earth, outside my window. They buried some depth, and formed slight cocoons. In March they came up to the top, and spun slight webs between the folds of the gauze, where they turned to pupæ. They never fed in the spring. (C.)

45. *A. oculea*.—Very common.

46. *M. strigilis*.—Abundant at sugar, including every conceivable variety. I also bred it. The larva is grassy green, very much pointed at each extremity, and feeds inside the stems of grasses.

47. *M. fuscicornula*.—Common at sugar.

48. *M. literosa*.—Common at sugar.

N.B.—I do not find this insect common in my neighbourhood. (B.)

I have met with this insect both in Suffolk and elsewhere at sugar, but always very sparingly, and I consider it by no means common. (C.)

49. *M. furuncula*.—Common at sugar.

N.B.—This pretty little moth is very fond of flying in the hot sunshine, but is so active when it gets into the net, that it is difficult to box. (C.)

50. *M. arcuosa*.—Once taken at light.

N.B.—This insect is common in Derbyshire, flying just before twilight, over

the low damp meadows. The female appears when the males are getting wasted, and is a smaller and very differently marked insect. She is very sluggish, and remains, unless stirred up, amongst the stems of the long grass and other such herbage. I never saw the insect in Suffolk. (C.)

51. *G. trilinea*.—Very common at light and sugar. Since coming into Derbyshire, I have taken two remarkably fine specimens of the variety *Bilinea*, but did not meet with it in Suffolk.

N.B.—The variety termed *Bilinea*, of Haworth, is taken commonly with the light variety in Combs Wood, near Stowmarket, at sugar, in June. (B.)

52. *C. morpheus*.—This, I believe, uncommon insect, was plentiful at Brandeston, coming to light. It occurred also, but much more rarely, at Playford.

N.B.—This is a common insect in the neighbourhood of Stowmarket. (B.)

53. *C. alsines*.—Common at light.

N.B.—Occurs but sparingly at Stowmarket, in July. (C.)

54. *C. Blanda*.—Common at light.

55. *C. cubicularis*.—Common at light.

56. *R. tenebrosa*.—Very common at light, that is, the male; I only once met with the female, and that by beating.

N.B.—I have seen the female at sugar in tolerable plenty in Hants. and Bucks. She is a very difficult insect to box, jumping off as soon as ever the lantern appears, and when boxed ceaselessly banging about, to the utter destruction of her plumage. (C.)

57. *A. puta*.—Occurs but rarely in the neighbourhood of Stowmarket. (B.)

58. *A. suffusa*.—Not at all common. On nettles.

N.B.—Very common at sugar in the neighbourhood of Stowmarket. (B.)

59. *A. segetum*.—Greviously abundant at sugar.

60. *A. exclamationis*.—Greviously abundant at sugar. When I was in Gloucestershire, a large high bank was being unsodded. The pupæ of these two species occurred there in almost incredible numbers. The labourers knowing that I was a "flycatcher," used to bring them to me by sixes and sevens, and I thus secured some beautiful varieties.

61. *A. corticea*.—I took splendid specimens of this insect at light. It is very obstreperous in a room, and has a fatal penchant for the light.

N.B.—Occurs but sparingly at sugar, in the neighbourhood of Stowmarket. (C.)

62. *A. nigricans*.—Extremely common at sugar.

N.B.—I have taken this insect during the last fortnight, (July 27th.,) on the flowers of the lime and sweet chesnut. (C.)

63. *A. tritici*.—Extremely common at sugar.

N.B.—On flowers of lime and sweet chesnut at Stowmarket. (C.)

64. *A. aquilina*.—Common at sugar at Brandeston, but not found at all at Playford. I should not have given this species thus confidently, being wholly unable to distinguish it myself, had I not taken up a boxful to London, mixed with *Tritici*, etc. At a meeting of the Entomological Society, Mr. Bond kindly pointed out the *Aquilina*s.

N.B.—On lime flowers and sweet chesnut. The latter tree is, I find, a capital bait for *Noctua*. They swarm over the blossoms, and soon get intoxicated, and upon a slight touch fall to the ground. (C.)

65. *A. agathina*.—There are three specimens of this insect in my collection, taken in the neighbourhood of Stowmarket. (B.)

66. *A. præcox*.—Taken by Mr. Levitt, of Finborough; one at Bury St. Edmonds, the other in the grounds of R. Pettward, Esq. I never met with it during my residence at Stowmarket, and always thought it an exclusively coast insect. (B.)

N.B.—A single specimen was taken at sugar a few years since, by Mr. W. Baker, at Coombs Ford, near Stowmarket. (C.)

(To be continued.)

INSECTS NEW TO THE SUFFOLK LIST.

BY THE REV. H. HARPUR CREWE, M.A.

T. formicæforme.—A correspondent informs me that he has taken this insect pretty freely in the neighbourhood of Stoke-by-Nayland.

P. chrysorrhæa, (Brown Tail).—I have both taken and bred this insect from the larva in the neighbourhood of Stowmarket during the present season. My friend Mr. J. Longe also took the larva, and myself the perfect insect, at Felixstow.

M. abjecta.—Mr. H. Bree and I took this insect at sugar on the coast at the end of July and the beginning of August.

A. saucia.—Mr. Bree and I took a single specimen of this insect at sugar on the coast, July 30th.

H. suasa.—Taken at sugar on the coast with the preceding.

H. dipsacea.—Mr. H. Bree took a single specimen on the coast the first week in August. I saw another a few days previously, flying over the beach in the hot sunshine, but unfortunately missed it.

Stowmarket, August 9th., 1858.

STAY AT HOME.

BY THE REV. H. HARPUR CREWE, M.A.

ENTOMOLOGISTS as a body are an erratic race. They are always apt to think that they can catch better things at a distance than at home. I do not for one moment pretend to be one bit better than my neighbours in this respect, but still I am quite sure we often miss very good things at home, while wandering on what frequently turns out to be a wild-goose chase after imaginary rarities at a distance. It may interest some of the readers of "The Naturalist" to read a list of insects not quite so common as to be a pest, which I have taken in years gone by within the boundaries of my father's Rectory grounds in Derbyshire. Those marked (p) I have also taken in the parish.

1. *P. statices*.—(p.)

2. *S. ocellatus*.—The eggs and larvæ common on the apple trees in the orchard.

3. *S. convolvuli*.—Hovering over the flowers of the 'Marvel of Peru.'
4. *C. elpenor*.—Over flowers of rhododendron.
5. *C. porcellus*.—Flowers of honeysuckle.
6. *M. stellatarum*.—Flowers of jessamine.
7. *S. bembiciformis*.—Larva in sallow stump, (p.)
8. *H. sylvinus*.—Flying over grass at twilight.
9. *H. hectus*.—Over heath, (p.)
10. *C. ligniperda*.—In old willows.
11. *C. fuscula*.—Eggs and larvæ on willow and sallow.
12. *C. bifida*.—Eggs and larvæ on various kinds of poplar.
13. *C. dromedarius*.—Larva on birch and alder.
14. *D. ziczac*.—Larva on poplar.
15. *N. dictæa*.—Larva on poplar.
16. *N. dictæoides*.—Larva on birch close to the windows. The perfect insect at light at my bed-room window.
17. *N. camelina*.—Larva very common on various trees.
18. *P. palpina*.—Eggs and larvæ on poplar.
19. *P. pudibunda*.—The perfect insect once, and the larva once. This moth is very uncommon in Derbyshire.
20. *C. Jacobæa*.—Larva on ragwort, but rare, (p.)
21. *P. fuliginosa*.—Larva on various low plants.
22. *E. lanestris*.—Very common.
23. *P. populi*.—Larva on various trees, (p.)
24. *T. cratægi*.—Larva on whitethorn.
25. *S. pavonia-minor*.—Cocoon on heath, (p.)
26. *P. fulcula*.—Larva on birch and alder: common.
27. *T. derva*.—At sugar.
28. *T. batis*.—At sugar.
29. *C. duplaris*.—Larva on birch, (p.)
30. *C. flavicornis*.—Larva on birch, (p.)
31. *B. perla*.—At light, and on the stable walls.
32. *A. tridens*.—Larva on whitethorn and plum.
33. *A. leporina*.—Larva on poplar.
34. *A. megacephala*.—Larva on poplar.
35. *A. alni*.—Larva on black Italian poplar, (p.)
36. *A. rumicis*.—Larva common on dock and sorrel.
37. *S. comma*.—Common, flying over the long mowing grass and flowers of rhododendron.
38. *N. typha*.—Larva in stems of *T. latifolia*, (p.)
39. *N. micacea*.—At light.
40. *N. saponaria*.—At sugar.
41. *H. popularis*.—At light.
42. *L. testacea*.—At light.
43. *A. unanimis*.—Larva on water-grasses in August and September.
44. *M. literosa*.—At sugar.
45. *M. arcuosa*.—Common, flying over the grass at twilight.
46. *C. morpheus*.—At light.

47. *C. blanda*.—At light.
48. *A. porphyrea*.—Larva on heath, (p.)
49. *T. interjecta*.—Flying along the hedges just before twilight.
50. *T. janthina*.—Beaten from whitethorn hedges in the day-time: common.
51. *N. C-nigrum*.—At sugar.
52. *N. triangulum*.—At sugar.
53. *N. bella*.—At light.
54. *N. umbrosa*.—At sugar, and flying over flowers.
55. *N. baja*.—At sugar, and flying over flowers.
56. *T. piniperda*.—Larva on Scotch fir.
57. *O. lota*.—At sugar.
58. *O. macilenta*.—At sugar.
59. *A. rufina*.—At sugar.
60. *O. litura*.—At sugar.
61. *X. cerago*.—Beaten from birch, (p.)
62. *X. flavago*.—Beaten from birch, (p.)
63. *X. gilvago*.—At sugar.
64. *T. subtusa*.—Larva on poplar.
65. *C. affinis*.—Beaten from elm.
66. *D. carpophaga*.—Larva on *S. inflata* and *L. dioica*.
67. *D. capsicola*.—Larva on *S. inflata* and *L. dioica*.
68. *D. cucubali*.—Larva on *S. inflata*.
69. *D. conspersa*.—Larva once on *L. dioica*.
70. *P. chi*.—At sugar, on walls; larva on lettuce.
71. *A. aprilina*.—Sugar.
72. *E. lucipara*.—Sugar. Larva on potatoe.
73. *A. nebulosa*.—At sugar.
74. *H. protea*.—At sugar.
75. *H. dentina*.—Rhododendron flowers.
76. *M. pisi*.—Larvæ, (p.)
77. *X. lithorhiza*.—Larva on snow-berry.
78. *C. vetusta*.—At sugar.
79. *C. exoleta*.—Larva on *S. salicifolia*.
80. *C. verbasci*.—Larva on *V. thapsus*.
81. *C. umbratica*.—Honeysuckle flowers.
82. *A. myrtilli*.—Larva and perfect insect on heath, (p.)
83. *A. urticae*.—Larva common on nettle.
84. *A. triplasia*.—Perfect insect flying over flowers.
85. *P. festuca*.—Once flying over flowers in the garden.
86. *P. iota*.—Common.
87. *P. pulchra*.—Not uncommon on flowers of honeysuckle and the orange lily.
88. *M. typica*.—Larva very common on dock and sorrel.
89. *M. maura*.—At sugar.
90. *P. cneæ*.—Heath, (p.)
91. *O. sambucaria*.—Abundant.
92. *E. apiciaria*.—Larva on willow, (p.)

93. *M. margaritarea*.—Very common.
94. *P. syringaria*.—Occasionally flying in the shrubberies.
95. *S. illunaria*.—Abundant.
96. *S. lunaria*.—Larva on elm and hazel.
97. *O. bidentata*.—Abundant, both larva and perfect insect.
98. *C. elinguaris*.—Abundant, both larva and perfect insect.
99. *E. tiliaria*.—Larva on willow.
100. *H. pennaria*.—Larva common.
101. *P. pilosaria*.—Abundant, larva and pupa.
102. *A. betularia*.—Abundant, larva and pupa.
103. *H. abruptaria*.—Perfect insect flying in the garden in April and May.
Larva on rose in July.
104. *B. repandaria*.—Common.
105. *B. rhomboidaria*.—Common.
106. *G. papilionaria*.—Perfect insect at light, larva not uncommon when
small on birch and alder in the shrubberies.
107. *T. lactearia*.—Common, larva and perfect insect.
108. *H. thymiaria*.—Common, larva and perfect insect.
109. *A. luteata*.—Not common, (p.)
110. *E. heparata*.—Larva and perfect insect common among alders, (p.)
111. *T. amataria*.—Not common.
112. *H. wavaris*.—Common among currant bushes.
113. *P. petraria*.—Common amongst heath and fern, (p.)
114. *N. pulveraria*.—Larva common on hazel.
115. *T. piniaria*.—Among Scotch firs.
116. *A. ulmata*.—Larva and perfect insect among elms, (p.)
117. *H. rupicapraris*.—Abundant.
118. *H. Aurantiaria*.—Occasionally the larva.
119. *H. progemmaria*.—Abundant.
120. *H. defoliaria*.—Abundant.
121. *A. æscularia*.—Larva on oak and elm.
122. *O. dilutata*.—Abundant.
123. *L. didymata*.—Abundant.
124. *L. pectinitaria*.—Not uncommon.
125. *E. affinitata*.—At light.
126. *E. albulata*.—Flying over low meadows, (p.)
127. *E. decolorata*.—Not uncommon.
128. *E. verosata*.—Larva on seeds of *Silene inflata* and *Lychnis dioica*.
129. *E. succenturiata*, (*subfulvata*.)—Flying, and at light.
130. *E. castigata*.—Common.
131. *E. denotata*.—Larva on *Pimpinella saxifraga* in September.
132. *E. nanata*.—Larva and perfect insect on *Calluna vulgaris*, (p.)
133. *E. subnotata*.—Perfect insect beaten from whitethorn hedge.
134. *E. vulgata*.—Perfect insect beaten from whitethorn hedge.
135. *E. absinthiata*.—Larva common on *Senecio Jacobæa*, August to
October, (p.)
136. *E. minutata*.—Larva on *Calluna vulgaris*, September, (p.)

137. *E. abbreviata*.—Larva on oak, June and July, (p.)
138. *E. exigua*.—Not common.
139. *E. sonibrinata*.—Larva common on juniper in the garden in May.
Perfect insect at light, August.
140. *E. rectangulata*.—Perfect insect in the garden.
141. *T. simulata*.—Larva on Scotch fir, (p.)
142. *T. firmata*.—Larva on Scotch fir, (p.)
143. *Y. impluviata*.—Larva on alder.
144. *M. rubiginata*.—Common, larva on alder.
145. *M. ocellata*.—Common, larva on *Galium verum*, (p.)
146. *M. albicellata*.—Scarce, perfect insect.
147. *A. badiata*.—Common, larva on petals of rose.
148. *A. derivata*.—Common, larva on petals of rose.
149. *S. dubitata*.—Common on flowers of heath in the garden.
150. *C. miata*.—Not common.
151. *C. corylata*.—Common.
152. *C. suffumata*.—Not uncommon.
153. *C. prunata*.—Not uncommon.
154. *C. testata*.—On heath, (p.)
155. *C. populata*.—On heath, (p.)
156. *C. fulvata*.—Swarms everywhere.
157. *C. dotata*.—Occasionally in the kitchen garden.
158. *P. comitata*.—Scarce, at light.
159. *E. cervinaria*.—Larva on hollyhock in the garden.
160. *E. mensuraria*.—Not uncommon, (p.)
161. *A. plagiaria*.—Not common, (p.)
162. *T. chærophyllaria*.—Not uncommon in low meadows, (p.)

All these insects not marked (p.) occur in the garden and close to the house. I do not for one moment pretend that this is by any means a perfect list, as since I began regularly to collect, my visits to Derbyshire have, from necessary duties, been, comparatively speaking, few and far between, and I have by no means worked the locality thoroughly. All the common *Pyrales* are abundant, and *H. stratiotalis* frequent at light; by this means I have also taken *P. glaucinalis* and Dr. Hagan's new insect *Acentropus niveus*.

Stowmarket, August 10th., 1858.

On the variation of species.—A discussion has been going on in the Entomological Society, about the possibility of different kinds of food and other circumstances, so altering the appearance of the larvæ of lepidoptera, as to give them the character of permanent species. Mr. Westwood has taken the affirmative of this view with regard to the larvæ of the small leaf-miners, figured in Stainton's last volume of the "Natural History of the Tineina." I confess to having formed the same opinion as Mr. Westwood, when I saw those figures, and I do not think his remarks have been properly met. His statement, as far as I could gather it, was that he considered that the assumed

specific difference between some of the species in the larva state, for there is no appreciable or permanent distinction in the perfect insect, was occasioned by difference of food; that is, a larva mining birch, might present a totally different aspect to one mining hazel. Upon this Mr. Westwood has been charged with holding the views of the transcendental or development school. Surely there never was a more absurd charge made than this. Without entering into the question of development, or maintaining for a moment views which I believe have no philosophical basis, I may remark in passing, that such a charge, so made, is a distinct proof that the principles of the school thus impugned, have not been understood in this discussion. Now with regard to the question at issue. Will Mr. Stainton, or any other person who has professed to study species, or who may have observed that the habits of those larvæ are different, be kind enough to lay down in clear and unmistakeable language, what are the differences of structure or habit upon which the determinations of these species are effected. It will not do to tell us that they are different in colour, because this is clearly to be accounted for in the different colouring properties of leaves; for assuming that *Chlorophylle* is alike in chemical composition and colour in different plants, provided its specific gravity is the same, no one will doubt that its colouring properties vary in leaves of different plants. Thus supposing it were more inspissated in a given quantity of beech leaf than in the same quantity of hazel, the colouring powers would be greater in the former than the latter. *A. fortiori*.—This would be still stronger if in addition the parenchyma of the plant were more condensed, and this is exactly the condition which obtains between the beech and the hazel leaf. It appears manifestly absurd to suppose that if the larva found it more easy to mine the upper than the under part of the leaf, or to make a blotch rather than mine at all, it were to be constituted a different species. I hope Mr. Westwood and others equally capable, will make a stand against this modern system of making species from unimportant data. As Mr. Westwood justly observed, were there any organic difference either in the larva or imago, there would be good grounds, and not otherwise, for constituting these insects in all essential particulars so exactly the same, into different species. I also hope that they will not be induced to give way by the disingenuous mode of argument, which assumes that men anxious for the real progress of science, must necessarily maintain the manifest absurdity that "the difference of habit was the cause of the modification of the species."—ED.

On so-called Showers of Insects.—The English people are not alone in their credulity about what are called "showers of insects or frogs." The readers of the "Gardeners' Chronicle" may remember some years ago, that one of the gardeners at Osborne published an account of what he called a shower of snails, and he was very angry with the writer of this notice, who presumed to account for the phenomenon upon grounds purely natural. The good people of Warsaw have had their shower this year, much to their wonder and surprise. Professor Waga has, however, in an excellent though somewhat long article in the "Revue de Zoologie," for June, also accounted for their

appearance in a most satisfactory manner. The "shower" in the present case was that of larvæ, which M. Waga, who saw them, recognised as those of one of the Coleoptera—*Cantharis fusca*, of Linnæus. They were found in great numbers crawling upon the snow, or congealed in the ice, on the 20th. of January. There had been severe weather, followed by a rise of the temperature, with rain, and then frost again on the night of the 19th. The people believed they had fallen with the rain. M. Waga cites four instances of similar phenomena having occurred, at Leufsta, in Sweden, in January, 1749; at Anspach, January 14th., 1806; at Noethen, on the Rhine, January 30th., 1847; and at Prosopow, in Lithuania, on the 24th. of January, 1849. In all these instances the larvæ were those of *C. fusca*, and the period, within fourteen days the same. Supposing these phenomena to have been produced by a water-spout, the only explanation possible, had they fallen with the rain, we have, as M. Waga remarks, the extraordinary coincidence of five water-spouts occurring in the latter half of the month of January, each time finding a swarm of larvæ ready to be transported. According to the new and generally received theory of Peltier, these water-spouts are produced by the junction of two opposite electric conditions—negative in the atmosphere, and positive in the earth—which conditions only occur during great heat. Besides it is self-evident, that if the larvæ had been transported by a water-spout, their appearance above ground in the middle of winter has still to be accounted for, as they do not, like the snow insects *Podura nivalis*, make their appearance at that time as a *natural law*. The explanation given by M. Waga is simply this:—The larvæ of *C. fusca* hibernate, but do not bury in the ground. In the autumn they feed among dead leaves and herbage, principally upon spiders, and they go to their winter rest in those localities, being provided by nature with a velvety coat, which protects them equally from severe cold and excessive wet. When the temperature suddenly rose, as it did on this 19th. of January, they were roused from their torpidity, and crawled out upon the snow, where they were again caught by the frost of the succeeding night, which either congealed them in the ice, or prevented them getting back to their dead leaves, before they were discovered by the good people of Warsaw.—ED.

Synia musculosa.—On the 10th. of August I had the good fortune to capture a female specimen of the above rare and beautiful insect; a friend with me the same evening took two others, male and female; the same friend a few days before took a female specimen of *Pieris daplidice*; another person here on the 5th. instant also took this insect, which I saw alive.—T. THORNCROFT, Brighton, August 18th., 1858.

N. senex.—I was not acquainted with the habits of this little insect till the other day. Happening to go down one evening (July 14th.) to a marsh near here, I noticed a small pale moth, which I took to be a *Crambus*, flying over the tops of the rushes at twilight. I at once caught it, and found it to be *N. senex*. On that and two or three other evenings, I took twenty or thirty. The female seems to be sluggish, for I only took two.—H. H. CREWE, Stowmarket, August 9th., 1858.

P. palpina.—I took a male of this insect at light, August 6th. Mr. J. King took another, August 1st. This looks like a second brood.—Idem.

E. denotata.—I have been fortunate enough to breed seven specimens of this pretty Pug during the present season. The larvæ, which are green, or dusky purple, with a broad dorsal stripe of the latter colour, feed on *Pimpinella saxifraga* in September. I took them both in Derbyshire and Suffolk.—Idem.

C. spartiaria.—I bred two fine specimens of this insect, July 16th. and 23rd., from larvæ taken at the end of May. The rest shew no signs of coming out. Last year all the pupæ remained quiescent till September and October, the usual time for the appearance of the perfect insect.—Idem.

S. convolvuli.—I regret to say that all my eggs of this insect prove to be infertile.—Idem.

Tenacity of life in S. rhamnaria and vetularia.—On the evening of July 3rd. I took ten fine specimens of each of these insects. I gave them a good dose of ammonia for a couple of hours; and then as the following day was Sunday, and I was too tired to set them that night, put them into the relaxing box till Monday morning. The next day, before I went to church, I just looked into the box, and found them perfectly motionless, and apparently quite dead. On my return home in the evening I again looked in, when to my horror I found three or four of each species had come to life, and utterly ruined themselves and the majority of their companions by flapping about.—Idem.

Colias edusa.—I have taken several specimens of this insect, which I believe has been frequently seen this year, but never before during the time that I have been collecting, (ten years,) have I seen one. I also took a fine specimen of the Convolvulus Hawk Moth a few evenings since. Is not this rather early for its appearance?—W. H. TUCK, Tostock House, near Woolpit, Suffolk, Aug. 23rd., 1858.

On Monday, the 23rd. of this month, a specimen of *Colias edusa* was captured by my brother, H. W. Alington, Esq., in the parish of Welton-le-Wold, near Louth; there was another in company with it.—R. P. ALINGTON, Swinhope Rectory, August 27th., 1858.

The present appears a good year for this species. Three were seen at once in the parish of Warter, near here, and one was seen in the parish of North Dalton, by Miss Rose Morris, on the 2nd. of September. I received a specimen from Fimber, near Driffield, from Mr. Mortimer, of that place, where two others have since been taken by him; and another from Lincolnshire, sent by the Rev. Edward Alington Cooper, taken by him on "The Slates," the highest point of the Lincolnshire Wolds. Mr. Graham, of York, also took four in Heslington Fields, near York, where others were taken.—F. O. MORRIS.

This morning, driving over the Wolds to Driffield, I saw nine by the roadside, and captured three of them.—F. O. MORRIS, September 13th., 1858.

I beg to record the following captures of *Colias edusa*:—On the 7th. ult. I took a fine male specimen in a market garden here, and the next day a female in equally fine condition, at Woodford-Bridge, in Essex. I may also mention that two more have been since seen by an entomological friend in his garden at Dalston.—ARTHUR E. BIGGS, South Hackney, September, 1858.

The *Colias edusa* has again appeared in our neighbourhood. Last week I took six, and saw several more.—W. G. GIBSON, Dumfries, September 1st., 1858.

Acherontia atropos.—It may be interesting to the northern subscribers of "The Naturalist," to learn that three caterpillars of the Death's Head Hawk Moth, (*Acherontia atropos*.) have lately been taken in the neighbourhood of Beverley, Yorkshire; one at Grovehill, and two at Leckonfield.—CHARLES WILLIAMSON, "Beverley Express" Office, August 18th., 1858.

I had several larvæ of *Acherontia atropos*, I believe fourteen, some eight or nine years ago from Barmston, near Beverley, two of which I succeeded in rearing, and they are now in my collection. The present would also appear to be a "good year" for the species. Calling at Hutton Lodge, near Malton, some weeks ago, I was asked if I could tell the name of a wonderful caterpillar the gardener had got. From the description I guessed it to be that of the Death's Head Moth, and such it proved. It had been found by a woman at the village of Low Hutton. She "took it up with a *tengs*, and put it into an old tea-kettle." When I saw it it was on a board, under a bell-glass. I saw that it probably wanted to go into chrysalis, as it appeared full-fed; and as it was readily given to me, I brought it home, when it at once went under the ground.—F. O. MORRIS.

A. alni.—Had the Rev. J. Greene been acquainted with the following facts concerning this species, I think in his remarks at page 207 he would have given York honourable mention as one of its best localities. I will give the following statements in support of this assertion:—In 1856 a larva of this species feeding on the willow, was taken in the Museum Gardens by Mr. Brown, which he succeeded in rearing the following year. On the 16th. of August, 1857, I was equally fortunate in taking another, in our garden, which fed on lime, from the pupa of which, on the 30th. of last May, emerged a beautiful specimen of this rare insect. On the 13th. ult. Mr. Prest found a fine larva, which went *down* a few days afterwards, and on the 29th. ult. Mr. Robinson obtained a larva, which was found on a blade of grass, the only trees near it consisting of oak and the common nut. Mr. Allis has also met with this species near York. I may here remark that although the "Manual" states that all the *Acronycta* larvæ spin cocoons, such was not the case with any of those which I now record, all the pupæ being *on or under* the earth, without the least appearance of a cocoon.—ROBERT ANDERSON, Coney Street, York, September 2nd., 1858.

Apatura iris.—My brother took a fine male specimen of *A. iris* on a small oak tree, quite a mile from Combs Wood, where we have seen about a dozen this year. Mr. Bull and Mr. Joseph King took five male and two

female specimens at Combs Wood. I had not the good fortune to take a single specimen there, (it requires a great length of net,) though I was in company with them. We only saw three, (all females,) which came to the ground, two of them we succeeded in capturing.—ARTHUR L. SIMPSON, Stowmarket, August 4th., 1858.

Captures on the Suffolk Coast.—My brother writes me word that he is taking on the coast *Luperina abjecta*, *Heliothis dipsacca*, *Agrotis saucia*, *nigricans*, *tritici*, and *valligera*, *Colias edusa*, *Miana furuncula*, *Hydræcia nictitans*, etc.—C. R. BREE, August 7th., 1858.

THE ROBIN.

In the winter of 1855-6, two little Robins came regularly to be fed in a garden situated in a small town in Hampshire. Early in the spring of 1856, they were seen constantly flying in and out of the porch of the garden door, and to the great delight of the younger members of the family, were found to be building their nest in a small watering-pot, which hung about four feet from the ground, and a foot from the door leading to the porch, which is formed of trellis-work entwined with jessamine, roses, and honeysuckle, and is the receptacle for the children's garden tools and playthings, being hung round with hoops, which are almost in daily use, and one of which was actually on the same nail with the watering-pot. This minute description is given to convey some idea of the constant passing to and fro there must be with a family of seven children, four of whom are boys.

The Robins hatched and reared a brood of five young ones, who all disappeared as soon as the old birds had taught them to fly, a process which was most interesting to watch, and which was most joyfully participated in by the children—one little girl stroking the young birds during the time. It was thought the nest might be too high for them to fly back to, so at dusk they were all carefully replaced, but this precaution proved useless, as they all hopped, or rather tumbled out again. Soon after, notwithstanding the watering-pot had frequently been moved, they re-lined the nest, and reared another brood of seven birds.

During each time of sitting, the parent bird came regularly at a certain time of the day to be fed. So much accustomed were they to little faces, and so tame had they become, that on several occasions when the watering-pot was taken down to exhibit the young ones to juvenile visitors, the parent birds might be seen in a laurel-bush close by, with worms, flies, etc., waiting their opportunity of coming to the nest, nothing daunted. Crumbs of bread placed on the watering-pot would immediately disappear,

and the old Robins would frequently remain perched on it, looking at the passers by.

It is a singular fact that these little Robins have continued regularly to visit the same spot, coming *inside the door* to be fed several times every day during the whole summer, frequently surrounded by five or six juveniles, all anxious to be first in feeding their pets.

In the beginning of February this year, the watering-pot which had been in use during the summer, was again hung on the same nail, and on the 11th. they commenced building, and a very snug little nest they have made; five eggs have been laid, and while I am writing this account the little bird is now sitting on them. She is often looked at during the day, which does not appear to cause her any alarm, and this winter they have frequently eaten from the hand.—*Church of England Sunday Scholars' Magazine.*

SYSTEMA NATURÆ.

BY THE REV. F. O. MORRIS.

(Continued from page 193.)

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| Sciurus pusillus, <i>Desm. Schinz.</i> Macroxus pusillus, <i>Less.</i> | Sciurus hypopyrrhus, <i>Wag. Schreb. Schinz.</i> |
| Sciurus annularis, <i>Schinz.</i> S. annulatus, <i>Desm. Less.</i> | Sciurus albipes, <i>Wag. Schreb. Schinz.</i> |
| Sciurus mustelinus, <i>Bachm. Schinz.</i> | Sciurus socialis, <i>Wag. Schinz.</i> |
| Sciurus ferruginei-ventris, <i>Bachm. Schinz.</i> | Sciurus stramineus, <i>Schinz.</i> |
| Sciurus mollipilosus, <i>Bachm. Schinz.</i> | Sciurus igniventer, <i>Natt. Schinz.</i> |
| Sciurus occidentalis, <i>Bachm. Schinz.</i> | Sciurus pyrrhonotus, <i>Natt. Schinz.</i> |
| Sciurus fusco variegatus, <i>Schinz.</i> S. Richardsonii, <i>Gray.</i> | Sciurus multicolor, <i>Rüpp. Schinz.</i> |
| Sciurus Colliæi, <i>Richardson. Schinz.</i> | Sciurus gambianus, <i>Rendall. Schinz.</i> |
| Sciurus Langsdorffii, <i>Brandt. Schinz.</i> | Sciurus erythropus, <i>Schinz.</i> S. gingivianus, <i>Shaw.</i> S. alborittatus, <i>Fisch.</i> |
| Sciurus variegatus, <i>Schinz.</i> | S. dschinschicus, <i>Linn.</i> S. Levailanti, <i>Kuhl.</i> S. setosus, <i>Forst.</i> |
| Sciurus variegatoides, <i>Ogil. Schinz.</i> | Sciurus congieus, <i>Kuhl. Schinz.</i> |
| Sciurus æstuans, <i>Linn. Schinz.</i> Myoxus Guerlingus, <i>Shaw.</i> Macroxus æstuans, <i>Less.</i> | Sciurus pyrrhopus, <i>Schinz.</i> |
| Sciurus Belcheri, <i>Gray. Schinz.</i> | Sciurus Cepapi, <i>Smith. Schinz.</i> |
| Sciurus Richardsonii, <i>Schinz.</i> | Sciurus madagascariensis, <i>Shaw. Cuv. Desm. Buff. Fisch. Less. Schinz.</i> |
| Sciurus nigrescens, <i>Bonnet. Schinz.</i> | Sciurus getulus, <i>Linn. Schreb. F. Cuv. Schinz.</i> |
| Sciurus dimidiatus, <i>Water. Schinz.</i> | Sciurus rutilus, <i>Rüpp. Schinz.</i> S. brachyotus, <i>Ekren.</i> |
| Sciurus variabilis, <i>Geoff. Schinz.</i> | Sciurus leucumbrinus, <i>Rüpp. Schinz.</i> |

- S. setosus*, Schreb. *S. ginginianus*, Griff.
Sciurus setosus, Schreb. Forst. Schinz.
S. Levillantii, Kuhl. *S. albovittatus*, Desm. *S. namaquensis*, Lich.
Macroxus albovittatus, Less.
Sciurus erythropus, Fr. Cuv. Geoff. Schreb. Schinz.
Sciurus prætextus, Wag. Schinz.
Sciurus ocularis, Smith. Schinz.
Sciurus rubrobrachiatus, Water. Schinz.
Sciurus Stangeri, Water. Schinz.
Sciurus erythrogenys, Water. Schinz.
Sciurus philippensis, Water. Schinz.
Sciurus Rafflesii, Horsf. Schinz. *S. Prevostii*, Desm. Less.
Sciurus auriventer, Schinz. *S. hypoleucus*, Horsf. Geoff. Fisch.
Sciurus malabaricus, Schinz. *S. maximus*, Schreb. Horsf. *S. indicus*, Erxl. Desm. *S. bombayus*, Bodd.
Sciurus bicolor, Schinz. *S. Ceylonensis*, Bodd. Desm. Shaw. *S. macrourus*, Forst.
Sciurus Leschenaultii, Schinz. *S. javensis*, Shaw. *S. albiceps*, Des.
Sciurus pygerythrus, Geoff. Schinz.
Sciurus flavimanus, Geoff. Guerin. Schinz. *S. vittatus*, Raffl. *S. bivittatus*, Desm. Horsf.
Sciurus McClellandii, Horsf. Schinz.
Sciurus Lokriah, Hodg. Schinz.
Sciurus locrioides, Hodg. Schinz.
Sciurus hippurus, Geoff. Schinz.
Sciurus nigrovittatus, Horsf. Fisch. Schinz. *S. griseiventer*, Geoff.
Sciurus Plantani, Schinz. *S. notatus*, Bodd. *S. bilineatus*, Geoff. Desm. *Macroxus bivittatus*, Less.
Sciurus insignis, Horsf. F. Cuv. Geoff. Schinz. *Macroxus insignis*, Less. Fisch.
Sciurus Kerodrenii, Schinz. *S. Keraudrenii*, Less. *S. ferrugineus*, F. Cuv.
Sciurus palmarum, Horsf. Schreb. Desm. F. Cuv. Schinz. *Tamias palmarum*, Less.
Sciurus Elphinstonii, Sykes. Schinz.
Sciurus Finlaysonii, Schinz.
Sciurus redimitus, Schinz.
Sciurus Ephippium, Mull. Schinz.
Sciurus laticaudatus, Mull. Schinz.
Sciurus modestus, Mull. Schinz.
Sciurus melanotis, Mull. Schinz.
Sciurus exilis, Mull. Schinz.
Sciurus syriacus, Ehren. Schinz.
Sciurus sublineatus, Water. Schinz.
Sciurus Delessertii, Guerin. Schinz.
Sciurus caucasicus, Schinz. *S. erythræus*, Penn. *S. anomalus*, Gmel. Schreb. Pall.
Sciurus persicus, Gmel. Linn. Schinz. *S. vulgaris-persicus*, Erxl.
Sciurus affinis, Horsf. Raff. Fisch. Schinz.
Sciurus tenuis, Horsf. Schinz.

TAMIAS.

- Tamias quadrivittatus*, Schinz. *Sciurus quadrivittatus*, Harl. Rich. Fisch. Less.
Tamias uthensis, Schinz. *Sciurus uthensis*, Pall. Wag. Schreb.
Tamias striatus, Schinz. *T. striata*, Illig. *Sciurus striatus*, Linn.
Tamias Lysteri, Bach. Harl. Schinz. *T. Americana*, Kuhl. *Sciurus striatus-klein*, Pall. Schreb. *S. Lysteri*, Ray.
Tamias rubrolineatus, Schinz. *Sciurus rubrolineatus*, Desm. Ward.
Tamias minimus, Bach. Schinz.

Proceedings of Societies.

East Kent Natural History Society.—(Continued from p. 196.)—Hawking, that most noble of all sports,—and which, I am happy to say, is again rising in public estimation—shows the power we possess over birds, and the means at our disposal for training them. The glorious flight of a falcon towering far above us, then whirling with outstretched pinion, moving in most graceful circles, and at the call of return swooping down with great rapidity, and almost unerringly striking as he passes the whirling lure—is a sight, once seen, never to be forgotten.

Time prevents my dilating any more on this interesting subject of birds; but before quitting it, I wish to impress one fact strongly upon you—that, although occasionally birds do us some injury, yet in the aggregate they are our best friends; therefore nothing can be more destructive to our land than killing them. During the breeding-season our common birds feed their young almost entirely upon insects; thus the pert and bold sparrow is at this time of the year a true and good friend to the cultivator and gardener, and yet, like many true friends in this world, is rewarded by having a price set upon his head, and doomed to general and uncondemned destruction, by parish authorities, as well as every idle, ragged urchin capable of climbing to its nest. Rooks are also made to suffer the penalties inflicted by ignorance; yet the myriads of caterpillars, slugs, and various insects consumed by a rookery is incalculable.

A connexion of mine, some years since, farming nearly two hundred acres, was prejudiced against these birds, doomed them to destruction, and by poison and other means reduced his large rookery to a very small number of birds. But a fearful retribution followed. The next year the larva of the cockchaffer and other insects, abounded to that degree that his crops, in some places, were entirely destroyed. An intelligent friend having pointed out to him his great error, he quickly took as much pains to nurse his rookery, as he previously had done to destroy it. Fortunately the happy result of his present course, convinced him of the truth of his friend's advice.

I do not deny that birds occasionally do mischief, but the expense of frightening them off the land is very trifling compared with the ravages the insect world would commit, if not kept in some measure under by the birds during the breeding-season.

I have learnt with regret, that the practice of poisoning birds prevails to a great extent in this neighbourhood, and there is a magpie among the birds on the table which was killed in this manner. There is no doubt that the mixture used for the purpose contains strychnine, whose

poisonous effects are communicated to the body which it enters. When it is considered that some of the birds so killed are very likely to be eaten by poor persons, who may thereby be subjected to great danger, this matter becomes of importance, and I propose to refer to it more at length on a future occasion.

If ornithology offers inducements to the general, or partial observer of nature, to bestow some of his leisure hours in making acquaintance with its interesting details, what shall we say of entomology?

The different species of British birds amount to about thirty-five; whilst that of British insects to many thousands. Whether we look to the direct or indirect injuries they inflict on us, or the direct or indirect benefits they confer, their marvellous changes, beauty of colour, or singularity of form, under every point of view they appear to me to present such wonderful and speaking attractions, that I cannot conceive how it happens that its study has been, I may almost say, entirely neglected, or but very partially followed until the last few years.

When I returned to England, in 1830, from Brussels, where I had been to school, and was prepared to enter College life, I brought home a treasure far more dear to me than the metaphysical scepticism of the present day—the love of truthful nature. Imagine my disappointment—which was great indeed—when my enthusiasm was only rewarded by the jeers and rebukes of relatives and friends, at what they deemed my waste of time over such inconsiderable things as insects and butterflies, instead of the warm welcome of approbation the impulses of youth had anticipated.

But the taste, once imbibed, could never again slumber, and perseverance brought with it its proselytes. I had the supreme delight of seeing on my return home, unexpectedly one day, my dear old parents panting and exhausted from chasing a gaudy, yet common butterfly, over the kitchen-garden. They were caught *flagrante delicto*; and you may easily conceive that from that moment I had won the victory, for they never again rebuked my pursuit, nor suffered others to do so.

I believe, if we could state the relative number of entomologists in 1830 and 1833, they would stand as one to a hundred.

With so much to study, and so few years for collecting facts, can it be surprising to you that no means have yet been discovered to destroy the blight on the hop, the nigger on the turnip, the cockchafer grub among the grasses, or the wireworm in the soil.

These are but a few of the herd of destroying insects that rob the agriculturist of his hard-earned grains, and diminish the supply of food that would otherwise gladden the hearts of thousands of our poorer countrymen.

(To be continued.)

Thirsk Natural History Society.—Botanical Exchange Club.—The monthly meeting of the Thirsk Natural History Society was held on the evening of Tuesday, August 11th. Dr. George Lawson, Professor of Chemistry and Natural History at Queen's College, Kingston, Canada West, was elected a corresponding member.

Mr. J. G. Baker communicated a paper, entitled "Notes on the Spring Botany of Wharfedale," in which he mentioned the discovery by himself of *Salix undulata*, in an indigenous condition, by the river side just above Otley. He exhibited specimens of four naturalized grasses, gathered by Mr. D. Carrington near a paper-mill in the neighbourhooood of Bury, in Lancashire. These are *Setaria glauca*, *Panicum capillare*, *Digitaria sanguinalis*, and *Eleusine Indica*. The three first-mentioned are natives of southern Europe, the other of Hindostan.

Mr. J. H. Davies exhibited examples of *Orthotrichum fastigiatum* and *O. tenellum* from County Kildare, and of *Tortula papillosa* from hawthorn, between Thirsk and Wordend.

Review.

The Practical Naturalist's Guide; containing Instructions for Collecting, Preparing, and Preserving Specimens in all departments of Zoology, intended for the use of students, amateurs, and travellers. By JAMES BOYD DAVIES, Assistant Conservator of the Natural History Museum, Edinburgh; Fellow of the Royal Physical Society; and Member of the Yorkshire Naturalists' Club. Edinburgh: MACHLACHLAN AND STEWART, 64, South Bridge. London: SIMPKIN, MARSHALL, AND Co. 1858.

THIS is a small work, of about eighty pages. Its title sufficiently indicates the nature of its contents, but I may add that it is written in an agreeable style, calculated to interest as well as instruct. The instructions appear exceedingly good and full, with the exception of those relating to the preservation of insects, some of which are for the most part out of date, and superseded by modern improvements, and many that might have been given, the writer would appear not to have been aware of.

The Retrospect.

I THINK Mr. O. S. Round, in his paper on the "Gait of Birds," volume viii. page 174, errs in stating that the Heron and Nightjar are the *only* birds possessing the pectinated claw. The Cormorant and Shag both have it, as also the Bitterns, and, I believe, too, the Frigate Bird.—E. K. B.

NATURAL HISTORY OF SUNNINGHILL.

BY O. S. ROUND, ESQ.

(Continued from page 222.)

CHAPTER VI.

OF a manly and active character, King George the Third was not only fond of military matters, but took likewise a lively interest in the sports of the field, particularly hunting; and the pack of buck-hounds, before mentioned, were therefore kept in superior order. The open nature of the country peculiarly fitted it for such sports, as indeed it is in such regions that the red deer are found in a wild state in Scotland and Ireland. The broken nature of the ground, however, made riding difficult and hazardous, and hence a large number of soldiers, otherwise unemployed, were engaged in intersecting with roads the whole of this sterile region, including the parishes of Sunninghill, East Hampstead, Windlesham, Chobham, and Winkfield. These crossed the country in every direction, forming stars of junction on King's Beech Hill, Bol-ridge and other eminences, the latter having an obelisk on its summit, commemorating the event, with this inscription:—

In bello dormientes,
In pace laborantes;
Otium fugimus.

This memento has long ceased to exist, falling a prey to ruthless hands rather than the ravages of time. These rides were as wide as a turnpike road, perfectly straight, turfed, and accommodated with arches to carry off the water; and one is now known as the Nine Mile Ride, as it runs to that extent. But these works, although forming field roads in some instances, are now scarcely traceable, and will soon become things of the past. The breed of hounds employed were of the heavy and slow kind, in fact large stag-hounds; but this ceased with the death of Earl Cornwallis, about the year 1825-6, when fox-hounds were substituted, which, from the strength of the scent of the stag were enabled to run breast-high, and consequently went at such a pace that it was found necessary to have horses of the fleetest kind, to be able, in sporting phrase, to *live* with them, and the riding has ever since been very severe, and the runs, except in spring, necessarily short. Thus did Bagshot Heath and Sunninghill Waste become alternately—first the scene of the conflict between our wild ancestors and their invaders, a wilderness, a battle-field, a highway, and a hunting-ground.

It may be as well in this place to refer more particularly to the herbage which was and is found on this tract. There are only the three usual

kinds of heath found here, that is the Common Ling, (the *Erica vulgaris* of Linnæus, the *Calluna* of modern botanists,) the Bell-flowered Heath, (*Erica tetralix*), known as the Purple Heather, and the Maiden Heath. The latter is found almost always where it is marshy, and where sedge and Turfy-hair Grass is found, and is the first to flower in early summer. With this also is found the Cotton Grass, (*Eriophorum*), which is more properly a rush, and grows in the marshy places; it is unnecessary to say that the cotton is that to which the seed is attached, and when this is shed, a windy day fills the air with these winged *seminæ*. I have heard it said that old wives have manufactured pillows of this substance, but how these experiments answered, I should think very doubtful, although it is certainly a beautiful substance, and much resembles glazed cotton. Simultaneously with the Cotton Grass arise different kinds of the *Orchis* tribe, known popularly as "Cuckoo Spits," merely from the fact that the cuckoo-spit frog-hopper often chooses them as that whereon to deposit his froth. Some of these are spotted lilac, some orange, some light yellow, and others dark purple; the last, however, grow almost exclusively in the moist grass. The commonest are *O. morio*, *O. mascula*, *O. maculata*, *O. pyramidalis*, and *O. latifolia*.

The Brake, Bracken, or Common Fern, (*Pteris aquilina*), grows very luxuriantly, and I know of no prettier sight than the Purple Heath and Green Fern intermingled beneath a bright sun; but these things soon fade, and it is at all times difficult to get a perfect bloom of the Besom Heath, (*E. tetralix*), for the colour is so delicate that there are sure to be some brown or faded bells amongst it. I suppose the name "Besom Heath" had some origin, but assuredly the Ling, (*C.* or *E. vulgaris*), is that commonly used for making brooms. This is quite a business with us, and there is a regular season for Heath-cutting, beginning after the flower is just off, for, of course, all the soft shoots, if cut then, would be so much waste. I have met with varieties in the Besom Heath, but those were only in the colour, the structure being identical, and we all know that white specimens of all are occasionally met with.

Then there is that pretty little plant the Round-leaved Sundew, (*Drosera rotundifolia*), which is found everywhere just on the margin of moist places. Does the plant subsist upon the little flies which it catches, or is it meant for a trap at all? That the honey-like drops on the hairs do catch small insects every one knows. The Harebell, (*Campanula rotundifolia*), that delicate flower, is very plentiful upon our banks, and I have sometimes thought that we had two kinds, which, although identical in structure, differ so much in size as to be hardly referable to mere congeniality of soil. The Pasture Scabious, (*Scabiosa succisa*), is very common, as also the Common Snap-dragon, (*Antirrhinum majus*); and

upon the rising mounds of turf, sometimes in the very edge of the Heath, the Wild Thyme, (*Thymus serpyllum*,) sheds a sweet perfume upon the evening air.

It would be useless to enumerate all the common flowers of the wild, which, in common with all heathy districts, are found here; however, the true Forget-me-not, (*Myosotis palustris*,) is rare, though growing in plenty within two miles; and we have no Dew-berries, about which such a discussion some years ago was raised, with reference to the mention of it made by Shakespeare in the *Midsummer Night's Dream*; they were, however, found by one who knew the plant, at Stratford, and I have often gathered them in Essex, with the *Dew*, or bloom on them. The Ferns I shall give a list of hereafter. We have a great variety of these, more than is usually found in one district. The *Equisetum* also is not uncommon, and grows in great plenty on the slope from a farm called "Bell Vue," towards the east.

There can be no doubt that a light sandy soil, where it is not too poor, is much sooner brought into cultivation, and made to bear decent crops, than strong loam or clay, which receives all for so many years and gives back nothing; but no one can doubt the ultimate advantage of strong land, for when it does return it is a sign that it is to a certain extent made; whereas the sand acts as a filter, and all the rich moisture that is bestowed upon it sinks far below the reach of those vegetables for whose benefit it was put in. It is, therefore, by a happy union of the two that the best effect is produced in a moderate time. Now most of the gardens about us are formed in this manner; and lime is also found to work particularly well, or chalk, upon grass lands. There are many flowers which we grow in the richest luxuriance that make no appearance in clays. Thus Geraniums, particularly the Horse-shoe, (*Pelargonium zonale*,) attain the largest size, and grow, in fact, so much to wood, that it is impossible, without large conservatories to preserve them through the winter, by reason of want of room to accommodate them. The Scarlet, sometimes called the Bath Scarlet, (*P. inquinans*,) which is of a dazzling brilliancy of colour, also grows well. The Rose Geraniums, (*P. graveolens*, *P. capitatum*, and also the *Tricolor*,) thrive perfectly, shewing a great congeniality of soil so far as they are concerned. Of course we have the Herb Robert, (*Geranium Robertianum*,) and the Meadow Crane's-bill, (*G. pratense*,) and it is singular to observe how much resemblance there is between this flower, when its coloured leaves are shed, to the head of a crane or stork.

Fuchsias also are cultivated with great success; and, as we all know, Mr. Standish, whose gardens lie on the verge of the parish, has imported numbers of new species with great success, amongst which the *F. corym-*

biflora and *F. fulgens* are notable examples. Roses we peculiarly plume ourselves upon, and when I first remember our home, the bank surrounding it was covered with Damask Roses, which grew in the common sand, and indeed I believe some yet remain; and the Cabbage and Provence Roses are unrivalled for their luxuriance and fragrance. But I find myself now entered upon a wide sea, and must take breath for another chapter.

(*To be continued.*)

RAMBLES BY RIVERS.—No. II.

BY SAMUEL HANNAFORD, ESQ.

THE HOPKINS.

“*Ignota videre
Flumina gaudebat.*”—OVID.

WESTWARD ho! Further away from the haunts of men, to where, undisturbed by anything but the songs of our native birds, the busy hum of insects, and the air sweetened by the breath of cattle, and lovely wild plants giving odour as we press them, we may ruralise awhile. We have a friendship for the River which forms the subject of our remarks this month; for years we have wandered, day by day, on its margin, have seen it in all weathers, and in all moods; now gliding along with scarcely a ripple but that caused by the rising of a fish or the plunge of a water-rat; at other times disturbed by winds and floods: which was the grander aspect we could never decide, for each had its peculiar charms to enchant us, and even now looking around our study walls, ornamented with representations of our companions there and then, how much there is to remind us of the happiness our rural walks on its brink afforded us,—red letter days, indeed! but we are getting prosy already.

Near Mount Ararat then does this pretty stream rise, but passing somewhat away from the gold-fields, does not prove of service for washing the precious metal,—on it flows through high banks and low, with here and there a steep rock on one side, and rich arable land on the other, the former densely covered with festoons of the bright pink *Mesembryanthemum*, or “Pigs’ Faces,” the green *Corræa*, or Fuchsia, the russet-flowered *Pomaderris*, the Betony-leaved Violet, and others which would lengthen our remarks too much to mention. Numerous are the tributaries to the stream in its course. Muston’s Creek, the Salt Creek

from Lake Bolae, then Black's River or Emu Creek, and further on Cudgee, or Brucknall's Creek,—these, with fresh-water springs supply the current flow. A little lower down we come to the Hopkins Falls, whose limpid waters sparkle in the sun; and a few miles further, to the Allansford Bridge, past which the stream glides musically along, like the murmur of a pebbly brook in the Old Country, through rich black soil, well stocked with farms, and tenanted by industrious hard-working men. On the margin of another waterfall about a mile onwards, up to which the tide flows from the sea, stand steam saw-mills, and above it Tooram, the station of one of the earliest settlers in the district, thickly surrounded by Eucalypti, Cherry trees, (*Exocarpi*.) Box, and Light wood, old and young, such as we may travel a long distance without again seeing.

Nor are these richly-foliaged trees, quiet as they seem to us now, destitute of animal life; come you at nightfall, and watch the merry gambols of the Flying Squirrels and Opossums, leaping from branch to branch; listen to the heavy munching of the Wombat, who is feeding timidly on the grass which surrounds his burrow, into which, if he observes us, he hastens with a celerity which his looks belie; the slothful Koala, or Native Bear, too, comes forth to feast on the young leaves of the Gum-tree, and the long-snouted Bandicoot, (*Perameles nasuta*,) climbs about the fallen timber. We have a specimen before us as we write; it measures from the tip of the snout to the end of the tail sixteen inches, the tail itself being two inches and a half. Iris very dark brown, upper parts of the body dark grey, the lower white, the tail slightly hairy, certainly not scaly as some writers state, (at least in the individual before us,) head very long, with slender naked muzzle; fore feet with five toes, the two middle very long, with long claws, the third much shorter, and two clawless rudimentary ones placed some distance behind the others. The hind foot has four toes, the middle one remarkably long, those on each side being only half the length, and the fourth, some way back, also rudimentary. One of the claws on the side toe is bifid. We have taken the young from the pouch about September, at which time also the Flying Squirrel breeds.

The natives, it is said, avow that this singular animal, the Koala, never drinks water; and, as we have elsewhere remarked, we are inclined to believe that not only it, but all the animals of this country, can subsist for a considerable time without; yet in confinement we have frequently seen it thrust its head into a pan of water, probably to supply the moisture which he missed in the dry, long-gathered gum stalks and leaves which formed its food. When these were not fresh, the stems were always devoured first, but when new and moist the leaves were

eaten with infinite relish. There always appears to us somewhat of cruelty in keeping any animal of this kind in confinement, where not only is it deprived of its requisite food, but is unable to follow its natural habits and instincts, and what food it does get, is doled out at prolonged and irregular intervals, by the hand of some child to whom it has been given as a pet. They are remarkably fond of being noticed, and when scratched on the head, utter a low sort of growl, expressive of their gratification.

Singularly lazy is this creature in all its movements, crawling from bough to bough, with its young one grotesquely holding on to its neck, and even when fired at, it scarcely deigns to notice, certainly does not attempt to evade the danger.

Down the River a few hundred yards, and we reach a pretty well-timbered hillock, which is a favourite resort for holiday folk, who pic-nic here on festive days,—we notice shells of the oyster in abundance, which has evidently existed here in former days, but no trace of any beds can be now discovered by the enterprising fishermen who reside here about; and on the stones we get fine specimens of the Acorn Shell, or *Balanus*; and largely too, boughs of the flowering *Pomaderris*. A little picturesque island next meets the eye, endeared to many from its being chosen as a burial-site in early days for their relatives. Further on, we come to Bethungall, where reside more hospitable friends, to whom we never fail to pay our respects in passing, and from this point it is an easy walk to the caves on the coast, only discovered within a very few years,—we shall allude to them in a future paper. Herds of Wallabies frequent this neighbourhood, and even now the Emu is occasionally met with, finding abundance of food in the young shoots of the Brake Fern, (*Pteris esculenta*.) On the high banks here, where flourish some gay flowering-plants, the Fish Hawk rears its young, and the native Cat's tracks are conspicuous everywhere. The Cormorant, (*Phalacrocorax leucogaster*), with its olive brown plumage and white breast, mopes on any snag which may rise out of the water, taking flight for a few yards as our boat disturbs him, but anon perching again the moment all is quiet. The pretty Night or Nankeen Heron is abundant, and also the Little Blue Crane, with occasionally the White Egret.

Passing under Mr. Burke's residence, we catch sight of—

“The sea! the sea! the open sea!
The blue, the fresh, the ever free.”

Before we reach it, let us lie quiet awhile: here is the spot for a naturalist to enjoy himself; but be still, and let us light our pipes, for the keen air blows in from the coast. Look out on yonder mud bank,

—what see you there? It is an Ibis, picking its steps carefully, and feeding apparently on the smaller crustacea which fall in its way; and see too those noble Pelicans, with half-crammed pouches.

In this shallow water are myriads of the Long-turreted Cerithium, the Trochus, and others. That bird with the long red bill, with a beautiful silvery plumage, is the Sylochelidon, or Swallow-tailed Tern, whose habits we have alluded to previously in our pages; and that large fellow, the Black Swan, (*Cygnus atratus*,) certainly no "*rara avis*" is he in this country, inhabiting all the western lagoons of Victoria in flocks, varying from two to six, or probably more,—they generally move from one place to another by night, frequently uttering their, to us, discordant notes as they fly. Bishop Stanley, in his "History of British Birds," page 393, remarks, that although this bird cannot dive, it contrives to immerse itself so deep in the water, as to render its body nearly invisible, and thus avoid detection.

On the right is the boat-house of the "Faugh-a-ballagh" Club, with whose members we have spent many a jovial day on this stream; and on the banks almost immediately above it, the cemetery of Warrnambool, which is about a mile inland. Much praise is due to the trustees for the careful manner in which this place is laid out and kept. No ostentation whatever is there, but a quiet rural simplicity pervading everything connected with it,—wild-flowers springing up spontaneously, and decking the graves of those lying there.

Next we come to the fisherman's hut and punt;—let us rest awhile on our oars, and see the result of his haul. Here are Bream, Mullet, Salmon Trout, and a stray Herring, (which fish is generally taken with a fly higher up the stream, in plenty surely to augur well for the success of the recently-established Fishing Company.) We stoop, and find specimens of *Paludina*, or Marsh Shell: and in flower the pretty *Myoporum*. We have a specimen of *Trigla*, or Gurnard, captured here a few years since, which, if not identical with the Flying Gurnard, which, darting from the sea, is able to sustain itself for some time in the air, as in the *Exoceti*, or Flying Fishes, is at any rate nearly allied to it. This pretty fish was about a foot in length, head covered by a bony plate, terminating just before the first dorsal fin, in a spine on each side, teeth much crowded, upper jaw defended on each side by short projecting spines. The eyes are also protected on each side by two sharp spines, arising out of the bony plate before mentioned. The first dorsal is pinkish, about three-quarters of an inch behind the termination of the bony plate, and nine-rayed. Second dorsal immediately behind, silvery, with two pink lines across, extending to within half an inch of the tail, fifteen-rayed. Both these are placed in a furrow, with a row of spines on each side; the pectorals are

divided, the upper being very large, dichotomously-ribbed, of an olive-green with ultramarine spots; three cirrhi-like processes, attached at the base by a membrane form the second pectoral; ventral fins immediately under the pectoral, six-rayed, and pinkish. Anal commences at termination of ventral, and extends to tail. Head and upper parts brown, with occasional dots of black, sides slightly silvered, under parts white, mingled with a reddish tint.

But coming now to the sea, the channel of the river is somewhat narrowed, consequently the stream rushes down with greater rapidity, now forming deep pools which have formed our bathing-places in the morning, and our fishing-ground later in the day, from which as long as crabs were to our hand to serve as bait, we never failed to secure a dish of Bream. The entrance to the river from the sea is barred by a reef; but it is about this locality that we can collect such magnificent *Alge*, driven in here by the high waves. Let us see now; here is a mass which we pull in on our oar's blade, and we find *Areschougia conferta*, *Acrotylus Australis*, *Appjohnia latevirens*, and *Ballia Brunonia*; and in a heap thrown up on the beach we discover no less than six different species of *Caulerpa*, namely:—*geminata*, *filifolia*, *sedlioides*, *hypnoides*, *scalpelliformis*, and *obscura*; *Codium tomentosum*, frequent *Callophyllis*, *Bryopsis*, *Curdiea*, and *Conferva*. A little rock at the mouth of the river, on which grows the elegant Box-leaved *Alyxia*, reminds us much of one of Bewick's tail-pieces—a rugged piece jutting up, with the waves dashing against and over it, and a Cormorant resting on its summit. We once nearly lost our life whilst algologising on the beach near this place; the wind had been blowing a perfect hurricane for many days, causing such a commotion along the coast, as those only who reside westward can understand,—a lull came, and we ventured forth, tightly buttoned up, staff in hand, to make fresh discoveries amidst the dense masses of sea-weed east on the shore. We noticed at a few paces distance a lovely *Callithamion* left dry by the retreating waves, and rushed forward to secure it ere their return. We succeeded. Another met our eye, and whilst stooping to grasp it, we were thrown down by a crested wave, covered from head to foot with sand, and had we not saved ourselves by thrusting a long stick we had into the ground, we should hardly have been here to-day to speak of the beauties of the Hopkins.

Before closing this paper, we must turn to a very pleasing article by Mackie, on the "Sea-weeds as Objects of Design," which lately appeared in the "Art Journal:"—"Bright are the flowers of the earth, the first and choicest ornaments; pure, simple, and holy, their charms can ne'er decay, though familiarity and inconsistency may vulgarise, and innumerable misappropriations make us sometimes wish for the contrast that other less

showy objects would afford. While the fields are radiant with their beauty, and the gentle zephyrs fragrant with their scented odours, the great tide ebbs and flows over the flowerless plants of the sea. Around the huge rocks the perennial fringes of the olive fuci undulate in graceful folds among the swelling waves. I do claim for the neglected vegetation of the sea-side, an elegance of form and structure, a suggestiveness of mathematical designs, a poetry of association and typical expression, a simplicity and modest gracefulness, which will entitle them to the best efforts of the designer."

Then designers, conchologists, algologists, or pure lovers of nature, whoever and whatever ye are, go to the banks of the Hopkins.

Geelong, Victoria.

Entomology.

LIST OF LEPIDOPTERA OCCURRING IN THE COUNTY OF SUFFOLK.

BY THE REV. JOSEPH GREENE, M.A., ASSISTED BY THE REV. H. HARPUR CREWE, M.A.,
AND C. R. BREE, ESQ.

[The portions of these papers contributed by Mr. Crewe and Mr. Bree, are signed with the initials C and B respectively. N.B. at the head of a paragraph signifies that the remarks are made after those of Mr. Greene.]

(Continued from page 230.)

67. *T. janthina*.—Common, by beating.

68. *T. fimbria*.—Not rare. Several times bred.

N.B.—*T. fimbria* has been bred by Mr. Baker, of Battisford, but I never met with the insect. (B.)

I took this larva in plenty a few years since in Hampshire, during the month of May, by searching among the underwood with a lantern as soon as it got dark. It fed indiscriminately upon all the underwood, but I never found a single larva on a low-growing plant. I never met with it in Suffolk, either in the larva or imago. (C.)

69. *T. interjecta*.—Common, by beating. This species and *Janthina* seem very fond of resting by day among *Clematis*.

70. *T. orbona*.—Plentiful at sugar, and frequently bred.

71. *T. pronuba*.—In immense profusion at sugar. They are truly gluttonous in their habits—perhaps it would be more correct to say *intemperate*—drinking until they are literally swollen. On opening the abdomen it will be found filled with their "favourite vanity."

72. *Noctua glareaosa*.—Was taken near Stowmarket by Mr. Arthur Simpson, but rarely. (B.)

73. *N. augur*.—Very common at sugar and light; a perfect nuisance indeed.

N.B.—This insect has of late years entirely disappeared from my hunting-grounds at Stowmarket. (B.)

74. *N. plecta*.—Abundant at sugar, and on nettles. The pupa also found in profusion at roots of various trees.

N.B.—Like *A. putris*, found in the pupa state in profusion at the roots of trees, but never feeding upon them. It is exclusively a *low* feeder. Mr. Stainton gives April as the month for finding this larva, but is in error. It is full-fed in August and September, and is polyphagous upon low-growing plants. (C.)

75. *N. C-nigrum*.—Common at sugar, and on nettles. Double-brooded, I think, as I have taken it at the beginning of July, and again in September.

N.B.—Like my friend Mr. Greene, I have taken this insect in July, and again in September and October, and have no doubt it is double-brooded. (C.)

76. *N. triangulum*.—Common at sugar.

N.B.—The larva of this insect was most abundant in Hants., feeding in May by night upon bramble and various underwood. (C.)

77. *N. rhomboidea*.—Once at sugar.

78. *N. brunnea*.—Rare, at light, and bred.

N.B.—I also took this larva in profusion in May, by lantern-light, upon various underwood. In Bucks. it is a perfect pest at sugar, coming in swarms in July. (C.)

79. *N. festiva*.—In great profusion and variety at sugar, light, and on nettles. Also frequently bred.

N.B.—Abundant in the larva state in May upon underwood, principally bramble and honeysuckle. (C.)

80. *N. bella*.—Very common at light.

N.B.—This insect must be double-brooded. I have beaten it in June, and again in August and September. (C.)

81. *N. umbrosa*.—Common at light.

82. *N. baja*.—Not uncommon. Occasionally at light and sugar, but more frequently by breeding: the larva feeds on primrose, etc.

N.B.—The larva, which closely resembles that of *N. festiva*, was common in Hants., upon underwood at night, towards the end of May and beginning of June. (C.)

83. *N. xanthographa*.—In aggravating profusion. The pupa may be sometimes found at roots of trees, and, when bred, it is often a pretty insect.

N.B.—The larva of this insect is of a dirty whitey-brown colour, with two rows of black dorsal spots. It hibernates and feeds up in the early spring. It will feed on chickweed and many other low-growing plants. It is full-fed about April; it then spins a cocoon just under the surface of the earth, but does not assume the pupa state till the end of June or July. It closely resembles those of the *Leucania*. (C.)

84. *T. piniperda*.—I met with only one imago of this species. I, however, beat the truly beautiful larva not unfrequently from fir-trees in the woods about Kesgrave. It is terribly exposed to the attacks of ichneumons. Feeling tolerably certain of finding the pupa I neglected the larva, and was

properly punished for my indolence, for, though I searched carefully day after day, I did not find one. I cannot account for this.

N.B.—Like my friend Mr. Greene, I have never been able to find the pupa of this insect, though I have searched for it in localities where I knew the larva was by no means uncommon. The pretty larva is so horribly persecuted by ichneumons that I am induced to think that not one in twenty ever turns to a pupa at all. I have taken the moth at swallow-blossoms in April. (C.)

85. *T. Gothica*.—Common of course. The food for the larva, given in the "Manual," is "broom, clover, lilac, etc." It may very possibly feed on all these, being apparently polyphagous, but they are certainly not the proper plants to search. It is unquestionably a tree-feeder, preferring the oak.

N.B.—That the larva of this insect ever feeds on broom or clover, as stated in the "Manual," unless compelled, I do not believe. It invariably feeds upon trees or tall shrubs; upon these it is polyphagous. I have frequently found a weak miserable ichneumonid larva on the ground, or upon some low-growing plant, but its being there was no choice of its own. It had fallen from some adjacent tree, and was too weak to crawl up again: I never saw a healthy larva in such a situation. (C.)

86. *T. rubricosa*.—Taken at swallow-blossoms near Stowmarket, but rare. (C.)

87. *T. instabilis*.—Common.

88. *T. populeti*.—One solitary specimen at sugar.

N.B.—The larva of this insect is said in the "Manual" to be unknown, but is described by Mr. Doubleday in the "Zoologist," page 5436, who both bred it from the egg, and took it on aspen. It also feeds upon the black Italian poplar, under which tree I have dug up the pupa at Stowmarket. I found the larva this year, 1858, June 1st., upon the same tree, when searching for the larva of *T. subtusa*. When young it closely resembles this last-mentioned larva, and spins itself up in the same way between two leaves, or by uniting the edges of one. When full-fed its semi-transparent appearance reminded me strongly of the larva of *C. or*, but its blackish head was a distinct character. It is, however, extremely unlike the larva of the other *Teniocampæ*. The pupa is very similar to that of *T. gothica*. (C.)

89. *T. stabilis*.—Very common.

90. *T. munda*.—Two at sugar.

(To be continued.)

A LIST OF THE INSECTS OBSERVED IN THE SOUTHERN PART OF THE COUNTY OF SUSSEX.

BY W. C. UNWIN, LEWES.

(Continued from page 210.)

NO. VI.—INCLUDING PROSOPIS, SPHECODES, AND HALICTUS.

PROSOPIS.

Prosopis communis.—Taken near Rottingdean in June, but sparingly.

P. dilatata.—I had the good fortune to capture this species on the 14th. of June, of the present year, 1858: it appears to be both very local and rare. Mr. Smith tells us that not more than half-a-dozen specimens have come under his notice altogether, and those principally from Arundel, in Sussex. Mine were taken near Brighton.

P. signata.—Not by any means uncommon in this neighbourhood in June; both male and female have been captured. They were both seen in some plenty in 1857, near Lewes.

SUB-FAMILY II.—ACUTILINGUES.—WESTWOOD.

SPHECODES.—LATREILLE.

Sphecodes gibbus.—Of very frequent occurrence near Brighton and at Eastbourne, but I have not observed it in the vicinity of Lewes. It appears in May.

S. rufescens.—Very common; several colonies in this neighbourhood are annually observed. Appears in May.

S. ephippia.—Equally common with the last, and commonly inhabits the same bank. The beginning of May.

HALICTUS.

Halictus rubicundus.—The most common species of the genus, and appears to be generally distributed. It appears throughout April, May, and June; and I would here remark that the females of this genus invariably appear in the spring, whereas the males are not to be found until the autumn. For more detailed remarks on their economy, see Mr. Smith's interesting account in his "Monograph," page 21.

H. xanthopus.—Common in this locality and near Brighton in April and May. It is apparently a southern species, and local. It is a very beautiful species.

H. leucozonius.—Of frequent occurrence in August on *Hypochaeris radicata* and the Ragwort, (*Senecio Jacobæa*.) I have never met with a colony.

H. quadrinotatus.—This is a rare species in this district. It has been captured both near Glynde and Lewes.

H. cylindricus.—Most abundant, but very variable in point of size. It has a very strong aromatic scent, very similar to musk. The females appear early in April, and the males in August, on thistle-heads; both black and red varieties are equally common. Its colonies are of frequent occurrence.

H. albipes.—Not uncommon. The females, in common with many of this tribe, are especially partial to the flowers of the Dandelion, (*Taraxacum officinale*.) in spring; the males are difficult to discriminate from those of *Cylindricus* to the unpractised eye.

H. lugubris.—It appears to be locally distributed. It is not of uncommon occurrence near Brighton, Lewes, etc., in spring and autumn.

H. flavipes.—Common near Offham and elsewhere. This species also frequents the Dandelion in early spring and the Ragwort in the autumn. Both *Hymenoptera* and *Diptera* are most attracted by yellow flowers, and especially those of the *Compositæ*. It is a very interesting sight on a glowing August

day to see the *Halicti* and several of the *Diptera* clustered on the heads of the Ragwort, revelling in its golden blossoms.

H. smeathmanellus.—Not uncommon, although it is somewhat local even in this district. It has been taken near Brighton, Hove, etc. The females only have been observed.

H. æratus.—Common; appearing in May and June. We have several colonies in the immediate neighbourhood.

H. morio.—Very abundant, and found everywhere. We have a mixed colony near Kingston, composed of this species, *H. rubicundus*, and *Sphecodes rufescens*. The males are frequently observed late in the autumn. I have observed it enter the wall of my garden frequently.

H. leucopus.—Rare. Found near Lewes and Hove, but sparingly.

H. fulvicornis.—The male only of this species has yet been observed, not unfrequently in the autumn upon the flowers of the Ragwort, (*Senecio Jacobæa*.)

H. longulus.—Very local; specimens have been captured near Hove, by the coast, in July. Its colonies were very numerous in 1856, along the coast, extending for nearly two miles, between Southsea Common and Cumberland Fort, near Portsmouth.

H. minutus.—Not uncommon, and pretty generally distributed. I have taken it near Lewes, Seaford, Eastbourne, and Brighton, in May and June.

H. nitidiusculus.—Common in this locality generally in May and June, frequenting the flowers of the *Ranunculi*.

H. minutissimus.—The smallest of the species, and readily distinguished from its allies: it may be termed tolerably common. It associates with *H. rubicundis*, *æratus*, and *Sphecodes ephippia*, being frequently found mixed with them in the same colony.

(To be continued.)

EXTRACTS FROM

SMITH'S CATALOGUE OF BRITISH HYMENOPTERA.

GENUS SPHECODES.

THE bees which are included in this genus have hitherto been regarded as parasites on those comprised in the genus *Halictus*, and indeed many circumstances tend to support such a supposition; they are usually found burrowing not only in similar situations, but forming mixed colonies; the females of both genera appear some time before the males, and in fact their economy is alike. St. Fargeau places them amongst his division of parasites, immediately following his exotic genus *Rathymus*, with which they have not the slightest affinity; their only resemblance being in the distribution of the colours, black and red. The result of my observations leads to the conclusion that no species of the *Andrenidæ* is parasitic. The only apparent support of the theory of their parasitism, is the absence of the usual polleniferous organs; such however is also the case in *Prosopis*, *Ceratina*, etc. In the year 1849 I discovered a

mixed colony of the *Halictus abdominalis*, *Andrena nigro-ænea*, *Halictus morio*, *Sphecodes subquadratus*, and *S. Geoffroyellus*; this being at a short distance from my house, I had an opportunity of frequently observing their economy; my visits to the colony were frequent, and I made close observations of the proceedings of the bees; yet, notwithstanding, I could not in a single instance detect the *Sphecodes* entering the burrows of *Halictus*; those into which the former bee entered were of a smaller diameter than those of *Halictus*, in fact intermediate in size between the burrows of *H. abdominalis* and *H. morio*—too small to have admitted the female of *abdominalis*. These proceedings were observed on several occasions; no males of any of the bees were to be seen at this time, those of *Andrena* having disappeared some time, and those of the *Halicti* not being developed. On visiting the colony one cloudy morning, I was much delighted to observe the head of one of the species of bees at the mouth of most of the burrows—the female *Halicti* at their own burrows, and *Sphecodes* also at *their own*. The result of my observations of this colony led me to believe, still more firmly, that *Sphecodes* is not a parasite. Since the time when the above observations were made, I have on several occasions detected *Sphecodes* busily engaged in forming her burrow, a fact which I consider conclusive of the correctness of the opinions above stated.

GENUS HALICTUS.

THE economy of this genus of *Andrenidæ* does not appear to have been ascertained previous to my own observations being published in the year 1850: it is so remarkably different to that of all other solitary bees, except of those belonging to the genus *Sphecodes*, that I am surprised it had escaped the researches of my predecessors, who, like myself, “have loved to hear the wild bee’s hum.” It will be observed that the females of *Halictus* and *Sphecodes* make their appearance in June, and are to be found from that time until late in the autumn; but no males of these genera will be observed until long after the appearance of the females; my observations on a colony of *H. morio* will serve as the history of the whole genus, making allowance for the different periods of their appearance. “Early in April the females appeared, and continued in numbers up to the end of June; not a single male was to be found at any time. During the month of July scarcely an individual could be found, a solitary female might now and then be seen, but the spring bees had almost disappeared. About the middle of August the males began to come forth, and by the end of the month abounded; the females succeeded the males in their appearance about ten or twelve days. These industrious creatures immediately began the tasks assigned to them, burrowing and forming their nests; one of their little tunnels had usually others running into it, so that a single common entrance served as a passage to several cells, in each of which a little ball of pollen was formed, and a single egg deposited thereon. The larvæ were usually ten or twelve days consuming it, by which time they were fully fed; in this state they laid until they changed to the pupæ state, when they very shortly became matured.” I have reared individuals of *H. rubicundus* from the egg to the perfect insect; on the 15th. of July I procured cells containing the pollen balls with an egg on each; in twelve days the larvæ were full-fed; the

change to the pupa state took place about the 25th. of August, and during the first week of September the perfect state was acquired. The history of *Halictus*, therefore, is as follows:—The males and females appear in the autumn; the latter being impregnated pass the winter in the perfect state, appearing during the following season to perform their economy, as detailed above in the case of *H. morio*. This is the result of my present observations, and I believe it to be the true history of *Halictus* as well as of *Sphecodes*. Humble Bees and Wasps pass the winter months in a torpid state, having been impregnated during the previous autumn, but amongst solitary bees I know no other genera besides *Halictus* and *Sphecodes* which resemble them in this respect.

Suffolk Lepidoptera.—I have only just seen the "List of Lepidoptera," by Messrs. Greene, Crewe, and Bree, in "The Naturalist" from November last to the present time. As I at one time collected in that county, they may, perhaps, be glad to hear what rare insects I met with in that part of Suffolk in which I resided. In 1851 I took seven or eight specimens of both species of *Colias*; they were taken in the parishes of Shelley and Stoke-by-Nayland, and their vicinity. I have not, since that year, seen a single specimen of either. In the same and preceding year I took three or four specimens of *Sinapis* in Raydon Wood, where, I have been told, the late Mr. John Hoy once took the larvæ abundantly. I once saw *Sibilla* in a wood near Stoke-by-Nayland. *Iris* is tolerably abundant in Raydon Wood; I once got eight larvæ in one day there. I was told Mr. Hoy once obtained thirteen after a very hard day's work. *Cardui* was so abundant in 1851 that I took a gross, and could have taken ten times as many. What is very remarkable as to these insects is the fact, that in the spring of that year, a good many apparently hybernated specimens appeared, (much faded.) Now as I had carefully collected in the locality for the two preceding years, and never saw a specimen, it is difficult to understand where the hybernated ones came from. *Paphia* is very common, but I never saw *Adippe* in any of our Suffolk woods. *Lathonia*, according to Miss Jermyn, has been taken at Stoke-by-Nayland,—where, too, I know *Antiopa* occurred a few years ago.—but I had several unsuccessful trips to the place she indicated as the precise spot. Mr. Stainton also speaks of *Lathonia* having occurred at Lavenham, which is in Suffolk. I do not believe *Athalia* is taken in Suffolk; it is abundant, however, in a wood within two miles of Suffolk, namely, at Langham Leap, where I have taken it, as well as *Adippe*, in profusion. *Lucina* is by no means rare at Raydon; I got a very fine series of it there in 1850. I have only once met with *Betula*, and that not at Raydon, where it is said to be found, but on a hedge at Langham, a mile at least from any wood; it was a female much wasted. I have taken all the Hairstreaks indeed, except *Pruni*. I have never seen *Argiolus*, but *Corydon* I have taken in boundless profusion just on the borders of Cambridgeshire, but in Suffolk. *Agestis* is certainly not an uncommon insect in the neighbourhood of Stoke-by-Nayland. *Alveolus* and *Tages* are common enough at Raydon, but I

agree with Mr. Bree in believing *Galathea* not to be a Suffolk insect; it is however abundant in a wood on the Essex side of the River Stour, which divides the counties. I bred two or three specimens of *Bembeciformis*, and I one day took three specimens of *Bombyliiformis* in Raydon Wood. *Batis* and *Derasa* are not uncommon in a wood called Snake Wood, at Stoke. I have never seen *E. versicolor* at Raydon, but I think it must be there.—R. B. P., Grays Inn, London.

[The above communication, for which we are obliged, is authenticated by the writer's name.—ED.]

Double-broodedness of the Notodontæ.—In "The Naturalist" for April, 1858, No. 86, page 82, I remarked that it was my firm opinion that *P. palpina* was double-brooded, and gave my reasons for saying so. I am now happy to state that my friend Mr. Gascoyne, of Newark, who has with the most untiring perseverance set himself to work to prove the double-broodedness of some of the *Notodontæ* by incontrovertible facts, has been rewarded with the most signal success, and amongst others has proved upon evidence which nothing can gainsay, that *P. palpina* is double-brooded. He has given the result of his experiments in the "Zoologist" for September, page 6248. As many of the readers of "The Naturalist" do not see the "Zoologist," and as I believe I was the first person who started the double-brooded discussion, I may perhaps be excused if I give a short summary of Mr. Gascoyne's remarks. In the autumn of 1857 he had a number of pupæ of *P. palpina*. The moths began to appear May 28th., 1858, and in the course of a week every single pupa had produced a moth. From these insects he obtained two sets of fertile eggs. The first batch was laid May 30th. and 31st.; hatched June 8th. and 9th.; larvæ full-fed and buried June 27th. to July 4th.; all the moths emerged July 27th. to August 5th. The second batch was laid June 6th. and 7th.; hatched June 14th. and 15th.; larvæ buried July 10th. to 17th.; moths emerged August 5th. to 12th. Part of the first brood were kept entirely out of doors. Accident killed all but three; these were full-fed at the same time as those kept in confinement, and two moths appeared August 5th. The other larvæ of both sets, though kept in confinement, were fed upon growing plants. It is clear, therefore, that *P. palpina* is double-brooded both out of doors and in, that is, in its natural state, and that keeping the larvæ in confinement makes no difference at all. I now go on to *N. dictæa*, still quoting Mr. Gascoyne. From his autumnal pupæ of 1857 the moths began to emerge June 1st., 1858; eggs were laid June 3rd. and 4th.; hatched June 12th.; larvæ buried July 13th. to 19th.; moths emerged August 12th. to 17th. These larvæ were also fed upon growing plants. Lastly I come to *N. ziezac*. On July 17th., 1858, Mr. Gascoyne took twenty-two full-fed larvæ of this insect. Two died, the rest buried directly. The pupæ were kept almost all the time out of doors, and every one produced a moth from August 12th. to 15th. Now of course all these larvæ must have been hatched from eggs laid in May or June, and the moth which laid them was the parent of those which emerged in August. Now Mr. Edwin Shepherd, one of the strongest opponents of the double-brooded theory, said if we could prove this the chain of evidence would

be complete. My friend Mr. Greene, in replying to my remarks, ("Naturalist," No. 87, page 111,) objects that there is no recorded instance of the pupæ of *Notodontæ* dug up even so early as the beginning of August, producing moths the same year, but here is the instance, for it is clear, beyond the shadow of a doubt, that if Mr. G. had not taken these larvæ of *N. ziczac*, they would have gone down, and might have been dug up, and if they had would have produced moths the same year. I may add that in the case of both *P. palpina* and *N. dictæa*, the moths which came out in August paired, laid eggs, and the larvæ were reared. In conclusion, I cannot refrain from expressing my feelings of pleasure and satisfaction that all those assertions which I made when the double-brooded question was first agitated in the pages of the "Zoologist," have been so fully confirmed and established upon such incontrovertible evidence and infrangible proof. I cannot let the present opportunity go by without thanking Mr. Gascoyne most cordially for the indefatigable energy and perseverance with which he has pursued his experiments, and congratulate him most sincerely upon his signal success.—H. HARPUR CREWE, Stowmarket, October 2nd., 1858.

Killing Insects.—I cannot at all agree with Mr. Morris in his recommendation of Chloroform as the best and speediest mode of killing Lepidoptera, and unless "Willie" wishes to bring his insects to grief, I should strongly advise him not to use it. I have tried it over and over again, and have invariably found it turn the insects so rigid and stiff that it is impossible to set them out properly, to say nothing of their coming to life again in nine cases out of ten. I have now collected insects for some years, and have practised death in all manner of ways, and have no hesitation whatever in giving it as my own firm opinion that the strongest liquid ammonia is by far the best I know. Have a close-fitting tin-box made with a false perforated zinc bottom and a lid at each end. Dip a small piece of sponge about the size of a nutmeg into the ammonia, and put it into the false bottom end. Into the other end put your moth or butterfly; leave it there half-an-hour before you set it or it will very likely revive. If you have not a killing-box, a common jam-pot covered over with a square of glass, will do just as well, and perhaps better. You must not kill your insect if bred till it has been out of the pupa an hour or two, as the wings are limp, and the ammonia will spoil them, and what is more, the insect is apt to eject a quantity of pink fluid, into which it will flap in its death-throes, and ruin itself. There are a few insects which must not be killed with ammonia, as it takes away or deadens the colours; they are, however, so few, that they are soon known, and do not at all invalidate the efficacy of the receipt. I mention all those that I know:—*A. galatæa*, *C. elpenor*, *C. porcellus*, *X. croceago*, *G. papilionaria*, *P. cytisaria*, *N. viridata*, *T. vernaria* and *lactearia*, *P. bajularia*, *H. thymiaria*, *E. tiliaria* and *fuscantaria*, *L. miaria*, *E. coronata*, *H. quercana*, *prasiana*, and *clorana*, *T. viridana*, and *L. literana*. I should also never think of killing *P. statice* and *globularia*, *D. orion*, *A. aprilina*, *B. glandifera*, or *M. margaritaria* with ammonia, as it almost always injures green. These insects I stupify with chloroform, (only putting them into the fumes for a

minute,) and then pierce them under the thorax with a steel pen dipped in a strong solution of oxalic acid. The ammonia must be kept in a *tightly-stoppered bottle*, as in hot weather it is very restless, and does its best to drive the stopper out. When travelling tie a piece of wash-leather over the stopper, unless you wish your clothes to be saturated. Ammonia is very useful in [removing mildew,—soak a camel's-hair brush in it, and gently brush the mildewed insect. Oxalic acid is a deadly poison, and ammonia is not very agreeable to smell, so it is just as well to label both bottles "Poison."—H. HARPUR CREWE, Stowmarket, September 26th., 1858.

Notodonta dictæoides.—I wish to warn my brother entomologists that this insect will not bear relaxing. The other day I put a very fine-bred, but rather ill-set specimen into the relaxing pot, and left it, as I usually do the larger moths, for twenty-four hours. To my horror and disgust, upon taking it out, I found it completely ruined. All the beautiful clear white was turned dirty brown, and the purple gloss utterly gone. The relaxing apparatus was a jam-pot half full of wet sand, and cork on the top.—Idem.

Catocalia nupta.—I was not aware till this year that this insect ever flew in the day-time, but during the last month I have seen no less than four specimens disporting themselves at mid-day with apparently quite as much enjoyment as *V. atalanta* or *Io*.—Idem.

A. atropos and *S. ligustri*.—During the months of August and September four or five larvæ of *S. ligustri* and an equal number of *A. atropos* were found in the Rectory-grounds at Breadsall, near Derby. Neither insect has been seen in the parish before, and I can testify that it has been pretty diligently worked. I once had an old specimen of *S. ligustri*, which was said to have been taken in the outskirts of Derby, but I never myself, till now, saw or heard of the insect being taken in the county. *A. atropos* is also extremely rare.—Idem.

A. atropos.—A larva brought me full-fed July 15th. produced the perfect insect, a splendid male, September 22nd. I did not attempt to force the pupa, but left it entirely to itself, only occasionally moistening the moss with which it was covered.—Idem.

Are Grasshoppers Carnivorous?—I always understood Grasshoppers to be entirely herbivorous; however on Thursday I captured a fine female specimen of *Gryllus viridissimus*, in a field near Margate, and when I came home, put it into a large glass case, containing several larvæ of *Pontia brassicæ*. It seized one of them, and immediately devoured him. There were many leaves in the cage, and some grass was afterwards put in, but the Grasshopper seemed to prefer the caterpillars, and eat one or two more of them.—W. F. HUNTER, Cecil Square, Margate, September 4th., 1858.

Colias edusa and *hyale*.—I caught a specimen of *Colias hyale* here August 20th., and saw several others. I caught *C. edusa* as early as the middle of July.—Idem.

Colias edusa.—In a clover-field near this place my friend Mr. Bull took five male specimens of *Colias edusa*, during the last week of August.—ARTHUR L. SIMPSON, Stowmarket, September 13th., 1858.

S. convolvuli.—I beg here to record my second capture of *S. convolvuli*. I took a female before breakfast, resting on a ladder full in the sun, on the 1st. of this month. Through the recommendation of the Rev. H. H. Crewe, I placed it in a hat-box, hoping it would lay its eggs, of which it was very full, without injuring itself; but to my disappointment even on the 8th. no eggs were laid, but the insect was spoiled.—Idem.

Vanessa antiopa.—This rare and beautiful insect has, I have no doubt, occurred this year in rather greater numbers than usual, for the following have come under my notice in this neighbourhood:—One taken by Arthur Gruggen, Esq., at Barmby Moor, near Pocklington. One seen by Miss Cornelia and Miss Rose Morris, near Kilnwick Percy; one seen by them also at Emswell, near Driffield. One taken in the town of Beverley, at a sugar-cask in a cooper's yard; and one captured at Lockington, near Beverley, and obligingly sent to me alive by some unknown contributor there, who desired me to address her as "An Old Woman, Post-office, Lockington."—F. O. MORRIS, Nunburnholme Rectory, September 17th., 1858.

Acherontia atropos.—The larvæ of this great moth seems to have been unusually plentiful this year. In addition to the one mentioned in a previous number, I have since obtained one from Mrs. Conyers, of Emswell, near Driffield. I have heard of others in various parts of the county; and Mr. James Coutts writes me word of one found at Govan, Glasgow. It was found naturally on the potatoe, but it may be useful to many who hereafter keep them, as potatoe leaves cannot always be obtained, especially when the plants are diseased late in the year, to know that it fed well on the lettuce. It also feeds on the tea-tree and the jasmine. The one in question seems to have caused great speculation in the worthy city of Glasgow, as I learn from some paragraphs from the "Glasgow Herald," sent me by Mr. James Coutts, of that city. It was exhibited as a wonder, and a charge of two-pence was made for a sight of it! This reminds me of a village I have heard of in Dorsetshire, which, I believe, to this day goes by the name of "Monster" so-and-so, whatever the proper name is, which I forget. It appeared that on some occasion an itinerant fishmonger going that way, dropped by accident a live crab in the road, and no creature of the kind having been seen there before. The first peasant who saw it reported to the village that a monster was to be seen, in which opinion his fellow-townsmen, who thereupon trundled out "en masse" to see it, incontinently joined, and so gained for their local habitation the addition to its name of the "sobriquet" I have spoken of.—F. O. MORRIS.

Acherontia atropos.—Is it an unusual thing to take *Acherontia atropos* in the spring? for I have one that was taken on the 15th. of April last, attracted by the street lamps.—F. R. ELLIOT, Tresilian, Kingsbridge, Devon.

[The spring is, we believe, the natural time for the appearance of *A. atropos* on the wing. Mr. Stainton gives August to October for the imago, and from July to October for the larvæ!—Vide "Manual." If the pupæ are kept in a warm atmosphere the imago will sometimes appear in the autumn, but it is clear this is not normal. The plants upon which the larva feeds, and upon which the eggs are deposited, are annuals, such as the potatoe and other solenaceous plants.—ED.]

Deilephila Galii.—On the 20th. of August I captured a beautiful specimen of this insect hovering over a bed of verbenas, in a garden near the residence of the late Colonel Montagu, who was the first to discover it here. These are, I believe, the only two captures in this neighbourhood.—Idem.

Clouded Yellow.—On the 4th. of June I saw a fine male Clouded Yellow Butterfly. I did not succeed in capturing it, although I knocked it down with my hat; before I could secure it it arose and flew across a river where I could not follow. I see Mr. Wesley, of Winchester, has noted one on the 8th. of June, which is the earliest I have ever known except this one. The Clouded Yellow has been tolerably plentiful here this season.—STEPHEN CLOGG, Looe, September 7th., 1858.

P. arion in duplicate.—I have a few unset specimens of *Polyommatus arion* which I should like to exchange with any entomologist for others.—F. R. ELLIOT, Tresilian, Kingsbridge, Devon.

SYSTEMA NATURÆ.

BY THE REV. F. O. MORRIS.

(Continued from page 241.)

PTEROMYS.

Pteromys petaurista, *Schinz.* *Sciurus petaurista*, *Pall.*
Pteromys nitidus, *Desm. Geoff. Schinz.*
Sciurus petaurista, *Cuv. Fisch.*
Pteromys sagitta, *Geoff. Desm. Schinz.*
Sciurus sagitta, *Linn. Schreb.* *Sciuropteris sagitta*, *Less.*
Pteromys genibarbis, *Horsf. Schinz.*
Pteromys lepidus, *Horsf. Schinz.*
Pteromys elegans, *Mull. Schinz.*
Pteromys aurantiacus, *Munch. Schinz.*
Pteromys Horsfieldii, *Schinz.*
Pteromys volaus, *Schinz.* *P. sibiricus*, *Desm.* *P. russicus*, *Tiedem.* *Sciurus volans*, *Linn. Mull. Pall.* *Sciuropteris sibiricus*, *Desm.*

Pteromys volucella, *Schinz.* *Sciurus volucella*, *Schreb. Pall. Cuv.* *Sciuropterus Americanus*, *Desm.* *S. volucella*, *Less. Fisch. F. Cuv. Geoff.*
Pteromys sabrinus, *Rich. Schinz.* *P. Hudsonius*, *Fisch.* *Sciurus Hudsonius*, *Linn. Gmel.* *S. volans-majus*, *Pall.*
Pteromys alpinus, *Rich. Schinz.*
Pteromys fimbriatus, *Schinz.* *Sciuropterus fimbriatus*, *Gray.*
Pteromys Turnbullii, *Schinz.* *Sciuropterus Turnbullii*, *Gray.*
Pteromys derbianus, *Gray. Schinz.*
Pteromys caniceps, *Schinz.* *Sciuropterus caniceps*, *Pearson. Gray.*
Pteromys Pearsonii, *Schinz.* *Sciuropterus Pearsonii*, *Gray.*

Pteromys nobilis, *Schinz*. *Sciuropterus nobilis*, *Gray*. *Pearson*.

Pteromys oregonensis, *Bachm. Schinz*.

Pteromys squamicaudus, *Schinz*. *Anomalurus Fraseri*, *Water*.

Pteromys Oral, *Tikell. Schinz*.

ARCTOMYS.

Arctomys marmota, *Schinz, etc.* *Mus marmota*, *Linn. Schreb*.

Arctomys Bobac, *Schreb. Desm. Less. F. Cuv. Dict. Lich. Schinz.* *Mus arctomys*, *Pall. Forst. Shaw*.

Arctomys Monax, *Harl. Senreb. Schinz.* *Mus Monax*, *Linn. Schreb. Fisch*.

Arctomys Empetra, *Linn. Gmel. Harl. Schinz.* *A. melanopus*, *Kuhl.* *Mus Empetra*, *Pall. Forst. Shaw.* *Monax gris*, *F. Cuv. Geoff.*

Arctomys pruinus, *Linn. Gmel. Sabine. Schinz.*

Arctomys brachyurus, *Harl. Schinz.* *Anisonix brachiura*, *Rafn.*

Arctomys caligata, *Eschholz. Schinz.*

Arctomys flaviventer, *Bachm. Schinz.*

Arctomys ludovicianus, *Schinz.* *A. latrans*, *Harl. Fisch.* *A. missuriensis*, *Warden.*

Arctomys vigil, *Schinz.*

SPERMOPHILUS.

Spermophilus citillus, *Schinz.* *S. concolor*, *Temm.* *S. undulatus*, *Temm.* *Arctomys citillus*, *Licht.* *Mus citillus*, *Pall.*

Spermophilus Parryi, *Schinz.* *Arctomys alpina*, *Parry. Less. Harl. Fisch. Wagl. Schreb. Wagn.*

Spermophilus guttatus, *Temm. Schreb. Cuv. Geoff. Schinz.*

Spermophilus mexicanus, *Schinz.* *S.*

spilosoma, *Bennet.* *Citillus Mexicanus*, *Licht.*

Spermophilus macrourus, *Bennet. Schinz.*

Spermophilus Franklani, *Sabine. Isid Geoff. Harl. Rich. Fisch. Desm. Schinz.*

Spermophilus Beecheyi, *Schinz.*

Spermophilus Douglasii, *Schinz.*

Spermophilus Richardsonii, *Schinz.* *Arctomys Richardsonii*, *Sabine. Isid Geoff. Harl.*

Spermophilus Hoodii, *Schinz.* *Arctomys tredecimlineatus*, *Harl. Sabine.* *Sciurus tredecimlineatus*, *Mitchill.*

Spermophilus leptodactylus, *Schinz.* *Citillus leptodactylus*, *Licht.*

Spermophilus mugosarius, *Schinz.* *Citillus mugosarius*, *Licht.*

Spermophilus guttulatus, *Schinz.* *Arctomys citillus*, *Schreb. Desm.* *Mus citillus*, *Pall. Temm.*

Spermophilus fulvus, *Schinz.* *Arctomys fulvus*, *Licht. Blas. Fisch.*

Spermophilus rufescens, *Evers. Schinz.*

Spermophilus musicus, *Meuct. Schinz.*

Spermophilus xanthopymnus, *Schinz.* *Citillus xanthopymnus*, *Bennet.*

Spermophilus Eversmanni, *Brandt. Schinz.*

Spermophilus erythrogenys, *Brandt. Schinz.*

Spermophilus Clarkii, *Schinz.* *Sciurus Clarkii*, *Hamil. Smith. Bachm. Wagn. Schreb.*

Spermophilus lateralis, *Schinz.* *Sciurus lateralis*, *Say. Harl.* *Arctomys lateralis*, *Rich. Schreb.*

Spermophilus grammurus, *Schinz.* *Sciurus grammurus*, *Say. Bachm.* *Tamias grammurus*, *Fisch. Wagn.*

(To be continued.)

Miscellaneous Notices.

Birds in India.—There are a great many British Birds found in Oude in the cold season, particularly * Egyptian Neophron, Peregrine Falcon,

Common Starling, *Hoopoe, *House Sparrow, Common Kestrel, Sparrow-Hawk, Marsh Harrier, Hen Harrier, Redshank, Greenshank, *Common Heron, *White Stork, Ruff, *Quail, Kingfisher, (*A. ispida*.) once, Peewit once seen, Whinchat, Sand Martin, Swallow, Black-tailed Godwit, Common Sandpiper, *Green Sandpiper very common, Black-winged Stilt very common, Wigeon, Shoveler very common, Teal, Pintail, Garganey in March and April, Gadwall very common, Ruddy Sheldrake, Pink-footed Goose, Common Snipe and Jack Snipe, and *Stock Dove.—Extract from a letter to C. R. BREE, Esq., from CAPTAIN IRBY, 90th. Light Infantry.

Those marked (*) are found all the year.

The Bar-tailed Godwit.—On the 7th. of May a very good specimen of the Bar-tailed Godwit was captured on board a fishing-boat in mid-channel between this coast and France. It lived many days and fed freely, but died before I got it. It was in good summer plumage.—STEPHEN CLOGG, Looe, September 7th., 1858.

Little Bittern.—On the 21st. of May, a beautiful specimen of the Little Bittern was shot on Tudallit Farm, about two miles from this place; it was brought to me for preservation, in excellent condition, but unfortunately at that time I had a large abscess on my thumb, which prevented my setting it up. I sent it to Plymouth, to a taxidermist, who, I believe, has preserved it, but it has not yet been returned to me.—Idem.

Dusky Serranus.—A fine specimen of the Dusky Serranus, (*Serranus gigas*, Cuv.,) twenty inches in length and seven in breadth, was purchased on Wednesday last in the Falmouth Fish Market by Dr. Vigurs. It was caught in a ground seine net a short distance from the harbour. This and the one procured some years since by Jonathan Couch, Esq., of Polperro, are the only examples of this very rare fish recorded as British. Description:—Body ovate, thick, solid, compressed, of a dusky greyish colour, and covered with scales and brown patches; head rather short; eyes large, irides yellowish, pupils black; jaws, palatine bones, and vomer furnished with sharp teeth, (elongated teeth among the smaller ones;) lower jaw longest, its under surface covered with small scales; lips large and rather fleshy. Nasal orifices two and large; preoperculum denticulated; operculum with three flattened spines behind; dorsal fin single and long; the eleven anterior rays spinous, the seventeen posterior ones flexible; pectoral sub-ovate, eighteen rays; ventral six rays; anal three spinous and eight flexible rays; caudal sixteen rays; branchiostegous rays seven.—W. P. COCKS, Falmouth, September 20th., 1858.

Proceedings of Societies.

York Entomological Society.—This society, which is now progressing satisfactorily, was founded near the commencement of last year, with a view of effecting an earnest co-operation amongst the entomologists of York and neighbourhood, and to aid in the diffusion of knowledge in connection with their entomological pursuits. The meetings are held the first Monday in each month, at eight o'clock in the evening, and have not failed to prove interesting and instructive.

The October meeting was held on the 4th. of that month, at Mr. Prest's, 7, Castlegate, Mr. Birks in the chair.

Mr. Wade exhibited *P. acis*. Mr. Prest exhibited *C. edusa*, ♀ (variety *C. helice*), *C. hyale*, *T. betulae*, *P. arion*, a fine specimen of *V. antiopa*, captured on the 7th. of September, near York, and *P. festucae*. Mr. R. Anderson exhibited *S. convolvuli*, *Z. arundinis*, *P. palpina*, *D. orion*, *N. paludicola*, and *H. peltigera*. Mr. Robinson exhibited a most perfect specimen of *V. antiopa*, captured on the 13th. of September, near York, also an interesting variety of *S. tithonus*. Mr. B. J. Moore exhibited *T. cynipeforme*, *N. cucullina*, *O. gonostigma*, *H. Banksiana*, *Z. procellaria*, etc. Mr. Helstrip exhibited *A. atropos* and *A. pictaria*, taken near Dartford Heath. The chairman exhibited a fine series of *C. vetusta*. Mr. Moore showed some very well-executed drawings of the majority of the *Sphinxes*. The colours and details he had obtained very minutely of each species, and they were much admired.

About forty species of *Lepidoptera*, amongst which were *L. griseola*, *stramineola*, *muscerda*, *N. despecta*, *canna*, etc., the kind gift of Mr. W. Winter, Ranworth, Norwich, were duly distributed among the members, and a vote of thanks passed to the donor, together with a resolution to present that gentleman with a testimonial of esteem. It was also resolved that an offer of Wood's "Index Entomologicus" (by purchase) should be accepted.

RULES OF THE SOCIETY.

I.—That this Society shall be founded with a view of effecting an earnest co-operation amongst the entomologists of York, and to aid in the diffusion of knowledge in connexion with their scientific pursuits.

II.—That the Meetings in connexion with this Society shall be held at Mr. Prest's, 7, Castlegate.

III.—The Annual Meeting shall be held on the first Monday in January, when the following Officers shall be elected, namely,—a President, two Vice-Presidents, a Committee of five, and also a Treasurer and Secretary.

IV.—The Monthly Meetings shall be held on the first Monday in each month, at eight o'clock in the evening, when the Members shall be at liberty to discuss the proceedings of the Society, and to exhibit any specimens which they think will interest the Meeting, or make any remarks which may be of use to the Society.

V.—When necessary, the Committee Meetings shall be held before the Members' Meeting, when the business of the Society can be transacted.

VI.—There shall be a payment of sixpence at the commencement of each

Monthly Meeting; or otherwise an Annual Subscription of five shillings, due on the 1st. of January.

VII.—If a person leaves the Society, but wishes to re-enter within six months after he has ceased to be a Member, he shall be eligible on paying up the arrears to the time of his re-entry.

VIII.—Any person anxious to join this Society, must, at the ensuing Meeting, be proposed, and if such proposition is passed he shall be accepted as a Member, and intimation given him to attend the next Meeting.

IX.—There shall be a library in connexion with the Society; but no Member shall be allowed more than one book at a time, which book he can retain a fortnight; but if kept beyond that period he shall be fined at the rate of threepence for each extra week, unless he renews the book, which he shall be allowed to do, provided it has not been applied for by other Members.

X.—Any book lost or damaged shall be made good by the Member losing or injuring it.

XI.—It shall be optional with the Committee as to whether some books shall circulate.

XII.—The money belonging to the Society shall, after the payment of necessary expenses, be used to provide works for the instruction of the Members; which works shall be added to the library.

ROBERT ANDERSON, Hon. Sec., Coney Street, York, October 7th., 1858.

The Retrospect.

The Gait of Birds.—I am much obliged to E. K. B. for reminding me of my omission in my article on "The Gait of Birds," in not including the Bittern among those which have the middle toe pectinated. I should have said the Heron *tribe*. That the same formation was found in the Pelican kind I was not aware of.—O. S. ROUND, Richmond Terrace, Westbourne Grove, October, 1858.

The Querist.

IN the September number of "The Naturalist" I perceive a correspondent wishes to find the name of a Tern he had recently killed. From his description I make no doubt of its being the *young* of the Arctic Tern, a species far more plentiful on the coast of Devon than the so-called Common Tern. The description of the bird in question agrees with that of the Roseate Tern as regards the colour of the bill and peculiarity of voice especially, and were it not for the shortness of its legs I should judge it to be of that species; but the shortness of the tarsi is a characteristic which distinguishes the Arctic Tern from every other British species, at any age.—JOHN GATCOMBE, Wyndham Place, Plymouth, Sept. 18th., 1858.

NATURAL HISTORY OF SUNNINGHILL.

BY O. S. ROUND, ESQ.

(Continued from page 248.)

CHAPTER VII.

WHEN we speak of the wild *flora* of such a district as this, the list of plants must be necessarily very extensive. Those plants which grow on the road-side are most familiar to us. The Marsh Mallow, (*Malva sylvestris*,) is found on the sides of all the ditches, but never out of the cultivated parts. The Nightshade, (*Solanum nigrum*,) Feverfew, (*Pyrethrum*,) Meadow Sweet, (*Spiræa ulmaria*,) and in fact all the common weeds, which do not require a rich soil, are found. As soon as cultivation asserts its empire field flowers that thrive in a richer soil appear, and here we come to one of those facts of nature, so unfathomable, that it is idle if not impious to speculate, for we know what use authors, such as that of the "Vestiges of Creation" have made of them. In some of the coppices near the church, the Wood Anemone, (*A. nemorosa*,) the Wood Sorrel, (*Oxalis acetosella*,) with Violets and Primroses, are very thickly scattered, and the hedges in the same neighbourhood are filled with Wild Carrot, (*Daucus carota*,) Wood Vetch, (*Vicia sylvatica*,) Wild Parsnip, (*Pastinaca sylvestris*,) and Wild Parsley, (*Caucalis anthriscus*,) Mullein also is found in the grass-lands, (few indeed we can boast out of the village.) There are some portions of the wild where it is grassy, and here I have often found Gentian in a wild state, smaller and lighter-coloured than the garden flower, but undoubtedly identical with it; and rushes of all kinds are of luxuriant growth. As long as we are upon the common, which commences about half a mile west of the church, the violets are the common unscented ones, but in the coppices they are fragrant enough. There are a great many wild flowers, too minute to make any show, but lovely themselves; thus the Pimpernel, (*Anagallis*) and the Speedwell are delicately-coloured plants, but as tender as they are small, and die as soon as handled. Fox-glove, (*Digitalis*,) is very common, and grows to a large size; and the Bind-weeds, white and pink are common, but the Wild Clematis and other hedge plants, we see nothing of, no, not even in the cultivated parts; the moorland air is "ower cauld" for these gentry.

I have before referred to the heath, and shall only observe that the Ling is very various, as to its bloom, in colour and volume, some being quite light and single, whilst other specimens are deep pink and very double. Heath appears to like drought, for it is in hot dry years that it

is most luxuriant. The mosses which grow among the roots of the heath are white, brown, and scarlet-tipped, which last is a pretty plant, and generally grows in small spaces between the heath-tufts on the slope of a hill.

We have a great variety of grasses, but the Shaking Grass is not of the number; that which thrives most, greatly to the farmers loss and annoyance, is the Couch Grass, which when once it gets into the land, is extremely difficult to eradicate, and in fact, only is effectually got rid of by bettering the soil itself, for it requires a sand to run in, being formed of hollow shoots with joints, from each of which it sprouts, and if one be left, this will produce others with incredible celerity.

When we come to the ferns, (filices,) as I have before observed, we have a very numerous list. Of course the Brakes, (*Pteris aquilina*,) is that best known because most plentiful, but then there are other kinds scarcely less so, but which growing in more concealed situations, and of a small size, make less show. Thus the Common Polypody, (*Polypodium vulgare*,) is found on the banks in most of the lanes, and the Hard Fern, (*Blechnum boreale* or *spicant*,) in moist ditches. The *Filix-mas* is also very generally distributed in the cultivated parts, and even appears occasionally in the heathy banks where there is any grass. Near Broomhall, in a lane leading close by the site of the ancient monastery, I have found some delicate specimens of the *Filix-femina*; the *Adiantum nigrum* and *A. thelypteris* are occasionally found near Sunninghill Bog, in the banks of cottage gardens. On the verge of the parish eastward, we boast of some beautiful specimens of the Royal Fern, (*Osmunda regalis*;) and a servant in our employ obtained a splendid plant from the immediate neighbourhood of Cheapside, but the spot was kept a secret, and I only suspect whence it came, but as there is no doubt on the point, it is sufficient to establish the fact. Hart's Tongue, (*Scolopendrium*,) I believe we have none of, although I did once find an elegant specimen in a shaft of a cellar; but it is found some eight miles off in plenty. Several of the Beech Ferns grow in the hedges of Sillwood Park, in the centre of the village, and some of them attain a large size. We have not the Wall Rue, I believe it is a native of our soil, but grows in profusion on the east wall of Windsor Castle. Before I knew this plant well, I remember pouncing upon a leaf or two in Dungeon Ghyll, as a prize; but familiarity breeds contempt, and accordingly I now laugh at the value I then set on specimens of which I afterwards got enough and to spare. Club Moss, (*Lycopodium*,) and Horse-tail, (*Equisetum*,) are not uncommon, but these are only found in particular localities, and I never met with Adder's Tongue or Spleen-wort, nearer to us than Marlow Woods. I have always been to a certain degree sceptical as to some plants of this kind which have been made distinct

species, and therefore I shall not set down a list here of all those said to be found in this locality, which still boasts of as many of the tribe, if not more, than any one district in England.

(To be continued.)

THE BRITISH WILD GEESSE.

Read before the Natural History Section of the British Association, at Leeds,
September 24th., 1858.

BY ARTHUR STRICKLAND, ESQ.

GEESSE are a natural group of birds possessing several strongly-marked characters; they are aquatic birds, but live and feed much upon dry land; they feed in the day-time and rest at night, whereas ducks rest in the day-time and feed at night. They of all birds seem to undergo the least changes of colour in their plumage, the males, females, and young birds in winter and summer being nearly alike, thus differing greatly from the duck tribe. They have a character apparently peculiar to themselves, that of having in many cases the most perfect and delicate colours of their bills and legs when young, and losing that delicacy as they advance in age, thus entirely reversing the usual order. Some of the British Wild Geese, which we have now to consider, are so alike in plumage, that that important character can hardly be taken as an element to assist in discriminating the species, the forms and colour of their bills and legs, and the habits of the birds in a state of nature, being all apparently that we can safely rely upon. Besides this, they are the most difficult of all birds to study, the determined and persevering sportsman only being able to approach them; the naturalist has but few and only casual opportunities of examining them. From these circumstances the authors of works on British Birds seem to have been satisfied to take matters as they found them, giving themselves no trouble to examine carefully the characters of the species they describe, and only giving the accounts of their appearance and disappearance, and habits, as mentioned by others, and collecting the records of their having been met with in various parts of the country. Now Mr. Gould has given us three British Geese—the White-fronted, the Grey-lag, and the Bean Goose, thus including all that are not the two first above-named species, under the mysterious and misused names of *Segetum*, or Bean Goose. I will first make a few remarks on these two.

The *Anas albifrons*, or White-fronted Goose; in this the white band in front, (which is seldom wanting,) the plain flesh-coloured bill, the conspicuous black patches on the breast, and the orange-coloured legs will always mark this bird. It is not, or probably ever was, a regular migratory or

abundant species in this country, but is occasionally found in hard weather singly or in small groups, frequenting river sides or running streams, and I believe is never found in the open country, but it is stated to be found in large migratory flocks on the continent of Europe and America, and is the only British Goose found in the latter country.

The *Anas ferus* or *Anser*, the Grey-lag Goose, never was a migratory species in this country, but permanently resided and bred in the carrs of Yorkshire, and probably the fens of Lincolnshire; but it has long since been banished from these places, yet still breeds sparingly in the western islands of Scotland. These birds are the origin of our Domestic Goose, and I had lately an opportunity of removing all doubts upon that subject by observing three beautiful birds brought from Scotland by a friend of mine, which were taken when he was shooting in that country. They at once assumed all the characters and habits of the domestic bird, and had they not come to an untimely end, would probably soon not have been capable of being distinguished from them; they also exemplified my statement of the perfection of the colours of the bills of young birds. Nothing could exceed the beauty of their pink bills and white nails, so much so as to as well warrant us to consider them a distinct species, under the name of the Pink-billed Goose, as has been done in the case of the Pink-footed Goose, soon to be noticed. With these remarks I dismiss these two species, and proceed to consider what remains of this group, not the Grey-lag or White-fronted Goose.

From time immemorial one of the features of the north and east of England, has been the regular periodical appearance of countless flocks of Wild Geese, which arrive every autumn about the end of harvest, and when the objects of nature received more attention than they do in these days got the name of the Bean Goose, as coming in the time of bean-harvest, and when the bean-stubbles were ready for them, can it be doubted that these large flocks are the produce of one distinct species marked by nature with peculiar characters and habits. *This species is the only one that has any claim to the name of Bean Goose, (or Segetum,) the only migratory species in this country, and the only abundant and common species we have.* Unaccountable as the case may appear, this bird is not figured or characterized in any work on Natural History I am acquainted with, and is not mentioned in the works of Mr. Yarrell, Mr. Gould, or Mr. Morris, further than ascribing the habits of this bird to one given by these authors under the figures and description of an entirely different species, under the erroneous name of *Segetum*, or Bean Goose. Some years ago Mr. Bartlett, struck by the obvious difference between the Geese he met with in the markets, and the descriptions and drawings given of the Bean Goose, and not being properly acquainted with the real Bean Goose, was

induced to institute a new species, under the name of the Pink-footed Goose, though I was satisfied from the first this was an erroneous view of of the matter, and that this was really a fictitious species, (being the young of the true Bean Goose,) and further observations have entirely confirmed my convictions; still Mr. Bartlett had the merit in some degree of drawing the distinction between the Long and Short-billed Goose, but the real Bean Goose still remained undescribed. This bird, *the true Segetum*, or Bean Goose, is distinguished by its short and strong bill—its depth at the base being nearly two-thirds of its length—and by its migratory habits differing in that respect from all our other Geese, arriving periodically every autumn, spreading during the day-time over the stubbles and clover fields on the wolds and other open districts, rising like clock-work in the evening, and winging their way in long strings to the sand-banks in the Humber and other safe retreats for the night, returning as punctually in the morning to their feeding-grounds. This bird differs from the Pink-footed Goose in being larger, having a stronger bill and lighter plumage; but these differences are the result of age, not of species, and a careful examination of the numerous flocks on the wolds, as well as the individuals killed out of them will confirm this.

The next bird to be considered is the Long-billed Goose, figured and described by Mr. Yarrell, Mr. Gould, and Mr. Morris under the name of *Segetum*, or Bean Goose. This is distinguished by having the bill exactly twice the length of the depth at the base, a proportion quite different from the Short-billed Goose.

Before the beginning of this century, when the carrs of Yorkshire were the resort of countless numbers and numerous species of wildfowl, giving employment to numbers of decoymen, fowlers, and carrmen, I understand it was stated there were two species of Geese frequenting and breeding in the carrs, known by these people by the name of the Grey-lag and the Carr-lag. What the Grey-lag was is well known, as fortunately that bird retains the name originally given to it by the fowlers. What the Carr-lag was it is probably impossible now to demonstrate, but I have every reason to think it was this Long-billed Goose, a bird that resided and bred in the carrs along with the Grey-lag, and like that bird is no longer to be found in these districts, and as far as I know is not now to be found in any part of this country, and is now one of our scarcest British Birds, or almost a lost species. This bird is distinguished from the Short-billed or Bean Goose by its entirely different habits, and, as before stated, by its long bill. It may be thought by some that this difference of length may be the result of age, but this cannot be maintained, as its bill is small and weak, suited to its aquatic habits;—very unlike the short bill of the Bean Goose, suited to its granivorous and herbivorous feeding. It may

be possible the Goose found breeding in the north of Scotland by Mr. Selby may be this species, but the distinction between the Long and Short-billed Goose has been so entirely overlooked that we cannot determine that without further research. I will now give a list of the species.

Anas albifrons, (White-fronted Goose.)—Bill flesh-coloured, (Gould, 349.)

Anas ferus, or *Anser*, (Grey-lag Wild Goose.)—Bill pink, nail white, (Gould, 347.)

Anas segetum, (Bean Goose, Short-billed or Migratory Goose.)—Bill short, strong, and deep, the depth at the base being nearly two-thirds of its length; pale red in the middle, black at the extremities, but varies much in the proportions of these colours. Old birds nearly as large and pale-coloured as the Grey-lag Goose.

Pink-footed Goose.—Bill nearly the same proportions and colours as the last, but smaller and weaker; bird less and darker coloured; it is the young of the last, but Mr. Yarrell has given us a drawing of nearly an old bird for this supposed species.

Anas paludosus, (Carr-lag or Long-billed Goose.)—Bill long and weak, being exactly twice the length of its depth at the base. This is the Bean Goose of Mr. Yarrell's and Mr. Gould's drawings, but not of their descriptions. (Gould, plate 348.) The colour of the bill is like that of *Segetum*, and equally various.

Description of the Figures.—No. 1.—*Anas paludosus*.—Size of life; bill strongly toothed, a strong groove running the whole length of the lower mandible; bill two inches and three-quarters long, and one inch and three-eighths deep at the base.

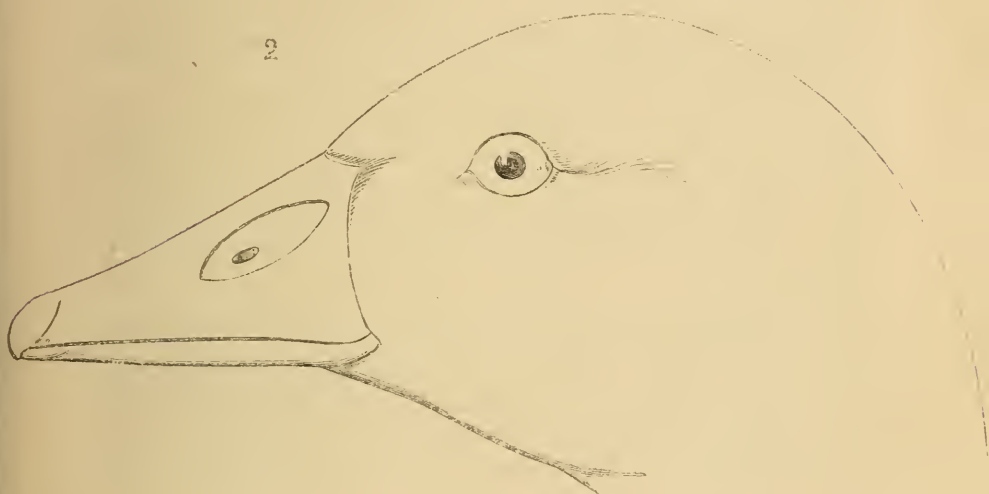
No. 2.—*A. segetum*.—Size of life, from an old bird as large and pale-coloured as a Grey-lag Goose. Bill one inch and seven-eighths long, and one inch and one-eighth deep at the base. In colour like the last, it is a pale red in the middle, and black at the extremities, but they vary greatly in the quantity and form of the black, indeed I have seldom found two alike. The bill of this bird seems more allied to the Bernicles than to the Long-billed Goose, with which it has been so much confounded.

No. 3.—*Pink-footed Goose*.—From a bird received some years ago from Mr. Bartlett; it so entirely resembles the last as not to require description, differing only in being a trifle smaller and weaker, evidently the result of age.

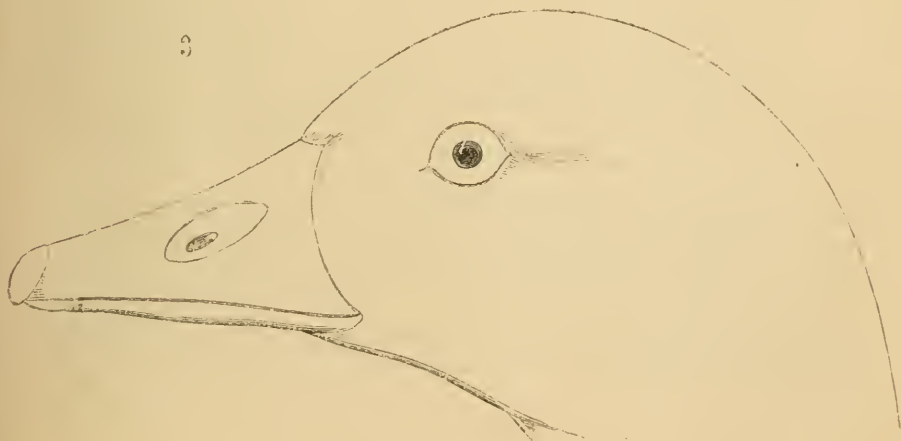
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Entomology.

A LIST OF THE INSECTS OBSERVED IN THE SOUTHERN PART OF THE COUNTY OF SUSSEX.

BY W. C. UNWIN, LEWES.

(Continued from page 257.)

No. VII.—ANDRENA.

Andrena eximia.—Very rare. I captured one female specimen in April, 1853, near Landport, Lewes, from the blossoms of the blackthorn; and again two more females in April, 1855, from the catkins of the willow, in the same locality.

A. cetii.—Once found near Lewes, in August, 1854; it is said to occur near the coast in the western part of Sussex.

A. cingulata.—Rare. Near Brighton and Portslade, in May.

A. cineraria.—Common, but local in its distribution. Colonies have been observed on the edge of the cliffs, between Brighton and Rottingdean, near Seaford, and also on the coast near Eastbourne. It appears in May. It is a very beautiful species when first disclosed, but soon fades from exposure.

A. thoracica.—This bee appears to usually effect the coast, and has been taken at Newhaven, Seaford, Brighton, and Eastbourne, in May and June, not uncommonly.

A. nitida.—Common on sunny banks in April, frequenting the early spring flowers, particularly the Dandelion, (*Taraxacum officinale*.)

A. albicans.—Abundant. Appears in April and May near Lewes, Firle, Ringmer, and elsewhere; generally frequenting the flowers of the Red Dead Nettle, (*Lamium purpureum*.) and Ground Ivy, (*Glechoma hederacea*.) The males of all the species make their appearance about ten days or a fortnight before their partners.

(To be continued.)

EXTRACTS FROM SMITH'S CATALOGUE OF BRITISH HYMENOPTERA.

GENUS ANDRENA.

THE bees included in the genus *Andrena* may be truly said to be the harbingers of spring, for on the first fine days of April males will be found frequenting the catkins and the early flowers of spring; my earliest date of their capture is March 4th., 1849, when I met with *Andrena bicolor* and *Gwynana*, both sexes of each.

This genus is by far the most numerous in species of all the genera of bees found in this country; we have about seventy known species, and when

the northern parts of the country are assiduously searched, no doubt many more will be added. These bees are all burrowers in the ground, some species preferring banks of light earth, others hard-trodden pathways, etc.; their burrows differ in depth, but are seldom less than about six, whilst others excavate to nine or ten inches; at the bottom of each burrow is formed a small oval cell, or chamber, in which the industrious female lays up a small pellet of pollen mixed with honey; these little balls are usually about the size of a garden pea, varying somewhat in size in different species. Sometimes, apparently to economise time, the bee constructs branch tunnels, each having a similar chamber at its extremity; this peculiarity I have observed in *A. rubricata* and *A. fulvescens*; it is also probably not unusual with many other species: when she has completed her task, she closes the mouth of the tunnel.

These bees are subject to the attacks of parasites: the first to be remarked upon are those bees which compose the genus *Nomada*; they are more popularly known as wasp-bees, since they bear a considerable resemblance to some of the small solitary species of that family. These parasites appear to be upon a perfectly friendly footing with the industrious bees, and are permitted, without let or hindrance, to enter their burrows. It has been advanced as a proof of the ingenuity and artifice necessary to be employed in effecting the deposit of their eggs in the working bees' nests, that the parasites should bear a close resemblance to the bees upon which they are parasitic: some instances may undoubtedly be advanced, as *Apathus* and *Bombus*, and also in the different species of *Volucella* which infest the nests of humble bees, but amongst the solitary bees no such resemblance is required to aid in any necessary deception. It may be remarked, that the two cases are not analogous: this is true; and I am not prepared to say that in the case of the *Bombi* and their enemies, it may not be necessary, but as regards solitary bees it certainly is not;—colonies of *Andrenidæ* and their parasites mingle together in perfect harmony, issuing from and entering into the burrows indiscriminately. I have on several occasions watched with much enjoyment a large colony of *Eucera longicornis*, the males occasionally darting forwards with great velocity, then turning sharply round, and as it were swimming in circles close to the ground, then darting off again and again in an unceasing round of sportive enjoyment; their industrious partners, whose whole existence appears to be bound up in one unceasing round of labour, would occasionally return home laden with food for their young progeny. Sometimes it would happen that a *Nomada* had previously entered her nest; when such proved to be the case, she would issue from it, and flying off to a short distance, wait patiently until the parasite came forth, when she would re-enter and deposit her burden. It will be observed, in this instance, that between *Eucera* and *Nomada* no resemblance exists in general appearance, one being several times larger than the other, and covered with pubescence of a sombre colour; whereas the parasite is a gaily-coloured insect, destitute of pubescence, and readily observed from the brightness of its colouring. To some extent I have observed that a constant connexion between certain species exists, and I have never met with some species of these parasites except in connexion with

certain species of *Andrena*; but there are others, as *Nomada ruficornis*, *succincta*, *alternata*, and *Lathburiana*, which infest the nests of several species of *Andrena* indiscriminately; the species are *A. tibialis*, *Trimmerana*, *Afzeliella*, and *fulva*; but the following I have never observed, except connected as follows:—*Nomada lateralis* and *A. longipes*, *N. buccata* and *A. argentata*, *N. borealis* and *A. Clarkella*, *N. Germanica* and *A. fulvescens*, and, lastly, *N. sexfasciata* and *Eucera longicornis*. Much further investigation is still necessary before we can arrive at a knowledge of the real nature of the connexion which exists between the bees and their parasites. It has been supposed that the parasitic larva is hatched sooner than that of the rightful owner of the nest, and that it consequently consumes the food, and leaves the larva of the bee to perish; but to this I do not assent: it appears so contrary to all natural laws, that I cannot think it even probable: nature I have never observed to be thus wasteful of animal life—such a proceeding is unnecessary, and therefore unlikely: where a destruction of animal life is observed, it can usually be traced to some reasonable cause, as the destruction of the larvæ of certain Lepidoptera, being a check upon their superabundance: a parallel to this does not appear to me to exist in the case of the bees: I am more inclined to believe, that when the parasite has deposited her egg upon the store of pollen, the industrious bee at once deserts it, and proceeds to construct a fresh burrow; and that the parasites which may be observed constantly entering different burrows, do so in order that they may find the requisite quantity of food, which will usually be much less than that required for the industrious bee; having found which, they deposit their egg, and the nest is then possibly deserted by its legitimate owner.

The *Andrenidæ* are also subject to the attacks of other enemies, if so they can be called; we have seen that in the first place their food is attacked by *Nomadæ*, we are now to find their larvæ attacked by insects belonging to the Order Coleoptera; these belong to the genus *Stylops*, which several distinguished entomologists of the present day agree in placing amongst the Heteromorous parasitic beetles. These insects were placed in a new order by Mr. Kirby, named *Strepsiptera*, and as such they are still regarded by many entomologists; we have at present only to do with them as enemies to the bees, and briefly to narrate the manner in which the latter are attacked by them. These insects are diminutive in size, the largest known species not exceeding a quarter of an inch in length; we are now speaking of the winged males; the females are apterous grub-like insects, which never leave the bodies of the bees. If the abdomens of a number of *Andrenidæ* be examined, it is most probable that the female of *Stylops* will be found; her presence is known by the protrusion of her head and a portion of the thorax between the abdominal segments on their superior surface, resembling the point of a small bud of a brown colour, or rather a flattened scale. I have several times bred the larvæ of *Stylops* in the following manner:—On finding a bee infested as described, place her in a box five or six inches square, cover it with gauze, and supply the bee with fresh flowers such as the *Andrenidæ* frequent; examine the bee every day, and it is most likely that in eight or ten days she will appear as if her abdomen were covered with

dust; examine it, and in all probability she will be found to be covered with an innumerable quantity of exceedingly minute animals; these are the larvæ of *Stylops*; by the aid of a magnifying-glass they may be seen to issue from the transverse aperture on the thorax: when the bee re-enters the cell, or settles upon flowers, these diminutive creatures will of course occasionally be deposited, and by these means, when other bees visit the flowers, they attach themselves to them and are carried to their nests. Judging from the multitude of larvæ produced by each female *Stylops*, amounting to many hundreds in each case, and the rarity of the perfect insect, the majority must perish, probably in their larval condition. From the fact of seldom more than two *Stylops* being found to infest the same bee, we may suppose that to be the largest number which infests one larva of an *Andrena*; they undergo their changes in the body of the bee, the male on its final transformation becoming an active winged insect, the female remaining a mere apod, attached for life to the bee which nourished it. A most complete and interesting summary of the observations of entomologists on these parasites, will be found in the twentieth volume of the "Transactions of the Linnæan Society," by Mr. George Newport, who has in this paper entered most minutely into the anatomy, functions, and development of these remarkable parasites, being the most interesting and complete essay on the subject yet written.

There are still other parasites to be noticed, which will occasionally be found on the bodies of these bees; the first to be noticed is a small orange-coloured *Pediculus*, which is about one-tenth of an inch in length; this is the larva of *Meloë*; I have several times reared these hexapods from the eggs of that beetle. For the most complete account of their history, reference must be made to the twentieth volume of the "Linnæan Transactions," which contains Mr. George Newport's most interesting memoir on *Meloë cicatricosus*; in this paper it is shown that the larva of the beetle feeds on that of *Anthophora pilipes*; but it remains to be proved, that the larva of an *Andrena* can serve as food for the larva of a *Meloë*; I am inclined to think this can never be the case, and that the fact of our finding them on these bees is a mere indication of the usual habit of the larvæ in attaching themselves to any insect which comes in their way, for we as constantly find them on Diptera and flower-visiting Coleoptera as upon the *Andrenidæ*: it has been shown that a larva of *Anthophora* will nourish that of *Meloë*, but so small a larva as that of *Andrena* can I think scarcely answer that purpose; I have however included them, but merely as supposed parasites on *Andrena*.

We now come to the last supposed parasite on these bees; it is found on their bodies, and exactly resembles in form the last-mentioned, but is of a brown-black colour, and is full twice the size; they attach themselves to the hairy parts of the bees, as the metathorax, and the sides of the thorax beneath the wings. What these pediculi really are, is at present involved in complete obscurity; Mr. Kirby regarded them as insects in their perfect condition, naming them *Pediculus Melittæ*. I have frequently observed these creatures in considerable numbers in the flowers of *Ranunculus acris*, as many as twenty or more in a single flower, about the month of April; and I think always before the usual time for meeting with the larvæ of *Meloë*.

I have found them on various species of bees, usually on those which are most pubescent, as *Andrena fulva*, *thoracica*, and *nigro-enea*; also commonly on *Melecta armata*, *Anthophora retusa* and *pilipes*; this circumstance would appear to confirm, or indicate a connexion between the insects, and from analogy we might readily conclude that this *Pediculus* must be a parasite on some species of bee; but we have nothing in support of this supposition, and against it we have the following observations:—Mr. Newport has shown that it cannot be the larva of *Meloë cicatricosus*, and, as well as myself, has proved that it cannot be that of *M. violaceus* or of *M. Proscarabeus*; and since the only other species of *Meloë*, the *M. variegatus*, does not occur near London, it appears certain that it cannot be the larva of any species of that genus, unless it be discovered hereafter that the larva of *Meloë* not only increases in size in its hexapod state, but that it also changes from bright orange to black.

Another circumstance which induces me to hesitate in adopting an opinion of the *Pediculus* being a larva at all, is the fact, that on opening small cells of *Anthophora retusa*, which I dug up on Hampstead Heath, I found two living specimens of the hexapod in the same cell as the perfect bee; it is certainly possible that they might have subsisted on a portion of the food laid up by *Anthophora*; but here was no change of condition, and how came they into the cell? I am inclined to think that they, being insects in their perfect condition, came there exactly in the same way as we find *Forficulæ*, having forced an entrance, which I did not observe, and that they were in quest of food, seeking what they might devour.

In the determination of the species of the genus *Andrena* much difficulty will be met with, the similarity of the males of many species being so great, that nothing short of a long and attentive study of them, combined with out-of-door observations, will enable the student to discover those niceties of distinction which are easily detected by the practised observer; these difficulties are considerably enhanced by the changes in colour to which they are subject. The species of the first division which are usually more or less red are very inconstant; specimens of the same species from one locality being highly coloured, whilst those from another have all a tendency to a sombre colouring; those species which have fulvous, or yellow pubescence, are much changed by exposure to light, so much so, that a bright fulvous insect becomes quite grey, or cinereous; it must therefore be borne in mind, that the individuals described are only such as are in fine condition.

The genus *Andrena* contains several species which, in the neurulation of the wings, differ somewhat from that of the type; these will be found to agree with the second type of neurulation, in which the first recurrent nervure is received by the second submarginal cell, towards the second transverse cubital nervure; that is to say beyond the middle. The following species belong to it:—*A. pilipes*, *varians*, *helvola*, *fucata*, *Clarkella*, *fulva*, *Lapponica*, *Smithella*, *denticulata*, and *argentata*.

REPORT OF SCIENTIFIC MEETINGS.

ACADEMY OF SCIENCES, PARIS.

SITTING, August 2nd, 1858.—DISEASE OF SILKWORMS.

M. ARMAND AUGLIVIEL writes, that he has examined into the disease which affects silkworms upon different common caterpillars, and that he considers the present epidemic as one of the causes of the very visible diminution, this year, in the number of the caterpillars, which are so injurious to apple trees. This observation is another confirmation of what we have already published, and what has been observed also by several breeders of silkworms, by entomologists, and among others, by Madame Bournay, the directress of the model weaving, in the Hall of Commerce at Lyons, who had attributed, like ourselves, the decrease in the number of butterflies, and other insects, to the effects of the present epidemic. It is therefore evident, as I have before remarked, that the epidemic in silkworms is not caused by ignorance in the breeders, as stated by some scientific men, who have only lately turned their attention to silk-culture; that it is not from mischievous practices that they are suffering at the same moment in France, Italy, Spain, and even in the East, where the worms are bred almost in the open air, and that it is unjust to accuse cultivators of this disaster; for that, the disease, on the contrary, depends upon other causes, among which the epidemic, which destroys both wild and cultivated vegetables, has an active share.*

August 9th.—FROGS IN RAIN.

M. DEZAUTIERE, a physician at Decize, (Nièvre,) communicated an account, which was related to him by an eye-witness of the occurrence. Some years ago, he said, an inspector of highways and bridges was overtaken by a shower, and took refuge in a house. An abundant rain fell; and the inspector, with several dwellers in the house, saw many toads fall from the chimney into the fire-place of the room in which they had taken shelter. The storm passed over, they went out, and the ground was covered with similar toads to those which had fallen upon the hearth.†

August 23rd.—GEOLOGY OF RUSSIA.

THE secretary presented to the sitting Dr. Nordmann, Professor of Zoology in the University of Alexander, in Finland, well known to the scientific world by his travels in the Caucasus and Crimea, his "Micographical Researches," his "Faune Pontique," and many other works upon the lower orders of animals. M. de Nordmann presented to the academy the two first numbers of his last

* Have any of our readers observed this disease among the Lepidopterous larvæ in this country?—Ed.

† Notwithstanding this somewhat loose statement, it is now well known that the frogs, or snails, or caterpillars, do not fall with the rain. Frogs and toads always jump about everywhere at certain seasons of the year, after rain has fallen. M. Dezautière does not say what sort of a house his friend the inspector went into. It was probably one to which the young toads had free access.—Ed.

work—"Paleontology of Southern Russia." Though Sir Roderick Murchison expressly states, in his "Geology of European Russia," that Russia, from the nature of its surface, does not offer the geologist very abundant stores of fossil remains, M. de Nordmann has found, during a residence of seventeen years on the shores of the Black Sea, in the environs of Odessa, as well as in the tertiary strata of Bessarabia, fossil remains which in richness equal those of Germany, France, and England. The part already published of this work, which has in addition an atlas of twelve plates in folio, for which M. Nordmann has himself executed the drawings, contains a complete monograph of *Ursus spelæus*, and *Odessanus*. The bones are drawn of the natural size. Amongst those to which attention should be especially directed, are the first or milk teeth, and the os hyoides. In confirmation of what M. M. Cuvier, Goldfuss, Wagner, and Middendorff have remarked, relating to the Bear of the Caverns, M. de Nordmann differs in opinion with M. de Blainville, and endeavours to show that the Bear of the Caverns cannot be considered as belonging to the same species as the living Bear. By way of comparison, M. de Nordmann had at his command a very large skull of the *Ursus ferox*. The second number contains the genus *Felis* and *Hyæna spelæus*, and in the genus *Canis* a new species, *Canis meridionalis*, from the diluvian earth of Odessa; the genus *Thalassictis*, the *Mustelidæ*, and *Lutra pontica*, besides *Rodents* and *Solipedes*, among which M. de Nordmann distinguishes several different species.

August 30th.—ORGAN OF HEARING IN INSECTS.

M. LESPES read a "Memoir upon the Auditory Organs of Insects." From this interesting paper we learn that some little openings observed by Erichson, on the horny covering of the antennæ, and which are closed by a membrane, form these organs. They are the same, but of much smaller dimensions, as the auditory apparatus of the *Decapod crustaceans*, which are also placed upon the antennæ.

M. JOLY read "STUDIES UPON THE DISEASES OF SILKWORKS, AND UPON THE COLOURING OF THE COCOONS BY THE FOOD."

As some scientific men have studied this subject for the first time, and perhaps have been led away by the respect shown to opinions expressed by illustrious academicians, M. Joly positively asserts, with the commissioners of the institution, that there is no direct relation between the state of the leaf and the diseases of Silkworms. The author reviews different morbid phenomena which he has remarked in Silkworms attacked with the epidemic, and which have been before observed by all those who have studied this subject for some years. Thus he has seen moults effected with difficulty; the skin of the head and of the rest of the body partly remaining, without the worms being able to cast it off, closing their mouth and anus; the accumulation of alimentary matter in the stomach, swelling out enormously the anterior part of these sickly worms; the decomposition, more or less, of the coatings of the intestine, the gangrenous spots, the infusoria which we have noticed some years ago, in the blood of the affected worms, the chemical reactions of this

blood, the myriads of moving corpuscles which we observed since 1849, etc. M. Joly thinks, as we do, that these maladies are not contagious, and his experiments agree with our own, in proving such to be the case. Like us he has also given *Muscardine* to these worms, inoculating them with sporules taken from insects very clearly affected, or by pouring these sporules over their bodies, which is equivalent to a species of inoculation. As to the remedies, he has tried all those which have been noticed, except sugar, but equally without success. In short, he ends by the usual recommendations of tending them carefully when young, following nature, etc. The most interesting part of this communication is the following:—"I have repeated the experiments of M. Rollin, on the alimentation of Silkworms by means of *Chica*. It is true that I have obtained cocoons coloured with red, but I have had similar ones by merely painting the body of the worm with colouring matter, at the moment it was going to climb upon the plant. This is a new proof that we cannot obtain from this experiment, or from those analogous to it, by M. Blanchard, any positive conclusion in favour of the so-called tracheal (*peritrachéenne*) circulation of insects."

[The above Report is taken from the "Revue et Magazin de Zoologie," for August. These Reports are drawn up by the Editor of the "Revue," and Secretary to the Academy, M. F. E. Guérin-Meneville.—Ed.]

THE BEST MODE OF KILLING LEPIDOPTERA.

BY THE REV. F. O. MORRIS.

I MUST caution the entomological public, those at least of them who are as yet "in statu pupillari," against adopting Mr. Crewe's recipe of the ammonia, in so far as he recommends it as preferable to chloroform. It is an injurious prescription, if its adoption should lead to the discontinuance of the latter. I have sent to him by post, some specimens of moths set by me, taken at random from a "lot" of others killed by chloroform, a few "e multis;" and have asked him whether they are any worse for the operation, and at the same time, whether he can send me any killed after his mode, that are better by comparison for the latter.* Mr. Crewe says that he has "over and over again" killed insects with chloroform, and has "invariably" found that it has turned them so rigid and stiff, that it is "impossible" to set them out properly. I grant that it does make them rigid and stiff, but I deny "toto cœlo," that there is any impossibility whatever in getting them right again. If you fail in doing so, the fault is in yourself alone, in ninety-nine cases out of a hundred, for I allow that there may be that proportion of exceptional cases, and not in the effect of the chloroform. A clumsy hand will no doubt fail, but a sixteenth cousin of the "neat-handed Phyllis" will be sure to overcome the difficulty. All you have to do is to get all the fingers of the

* Since the above was in type I have heard from Mr. Crewe in answer to my note. He says, "I cannot but confess that the insects you have enclosed to me are very nicely set, but I return you half-a-dozen which I am quite ready to put against them." They have come safe. Two are well set; they have proper-sized pins. The other four have the pins too large, two of them the wings *hollowed*, and the pins *tumbling forward*.—F. O. M.

left hand cleverly under the wings at the thorax, and so "get round" them, and press them straight back, or rather up, the right hand holding the insect firm by a pin through the thorax, and you will either hear, or if I may so say, feel a crack of the muscles, after which all is right and plain sailing. Even without this, putting the moths into the relaxing-box for a night, for the "cold water cure," will often do much towards a remedy.

Like Mr. Crewe, "I have collected insects for some years," in fact for the greater part of my life, and "I have no hesitation whatever in giving it as my own firm opinion," that chloroform, "take it for all in all," is by far the readiest, best, and *most humane*, method of killing insects.

As to their coming to life again, after being put into the chloroform bottle, here again Mr. Crewe is totally wrong, and in fact proves himself to be wrong, for the rigidity he speaks of, is the sign and proof of death, with which I opine their coming to life again is somewhat incompatible, if you leave the moth in the chloroform bottle for a quarter of an hour.

I say nothing of chloroform and water, with which no doubt Mr. Crewe has been imposed upon; but with good chloroform, take my word for it, the insect will never come to life again, not only not nine times out of ten, but not one time. If not rigid, it is because it is not dead, and if not dead, it is because the chloroform has not been good; but if the chloroform be good, the moth succumbs at once, is almost *instantaneously* rendered insensible, and if left in that state of coma for the brief space of time I have spoken of, will never flutter or fly again.

As to the alleged superiority of the spirit of ammonia, why, Mr. Crewe himself allows, that in order to secure the death of the insect, you must leave it exposed to its fumes for half an hour; and he confesses, moreover, that so "few"!! as twenty-six species are injured in their colours, (not so with chloroform,) by the use of the ammonia, to which I doubt not many others might be added; at all events I know this, that "villainous" brimstone, which in like manner destroys the colours of the green moths, destroys also those of some if not all of the brown ones, turning them to a yellowish tint, as e. g. *Eubolia mensuraria*, and so I conclude, by parity of reasoning, it probably is with ammonia. "As at present advised," I feel disposed to say "I'll have none of it." Commend me to the chloroform, and I re-commend "Willie," and all others "whom it may concern," not to be led away from following the wholesome advice I gave him, by any fear of "coming to grief," which I much misgive me he "Will" if he is so "green" himself as to use the ammonia, either for the "greens" or for any other insects, in preference to honest good chloroform. As I told Mr. Crewe in my note, his advice is calculated seriously to mislead, and so I now tell my readers.

As to oxalic acid, it no doubt is a deadly poison; I should be very sorry to take a dose of it; but some moths have "nine lives," and nothing so good as chloroform for their destruction. This very summer I had two huge Canadian moths in chrysalis here, namely, *Hyalophora cecropia*, which in due time came out; measuring all but seven inches across the wings. I killed them with oxalic acid, but one of them, when I at first thought it was dead, was not, but came to life again.

With regard to the stopper being apt to fly out of the ammonia bottle, and requiring to be tied down, the same takes place with chloroform, when at least the chloroform is good. The best place to get it genuine, is at Apothecaries' Hall. Æther is not chloroform, though I fancy it is often sold for it in the country, and it appears that Mr. Crewe has been "done" the same by.

The best mode of proceeding is to take with you a quantity of chip pill-boxes which may be bought at any druggist's, in "nests" as they are called, at the rate of twelve dozen for one shilling and fourpence. You put the moths either from the tree or out of the net into those, and so bring them home. It is wonderful how quiet and still they keep, instead of knocking about as might be supposed. In the evening they will just move, or perhaps flutter, if you open the lid of the box, but by leaving them till the morning, which is the proper time, for you should never attempt to set a moth by candle, lamp, or gas-light, they will lay perfectly still and motionless, and you can then see which are really worth keeping, and which should be returned to liberty again. The former you shake out of the boxes into a wide-mouthed chloroform bottle, with a few drops of chloroform renewed every now and then as may be required, and filled with small pieces of blotting-paper to absorb any moisture from the chloroform or the moths themselves, and to prevent injury from their rubbing together, and in a quarter of an hour you may safely take them out, "kai ta loipa."—F. O. MORRIS, Nunburnholme Rectory, November 1st., 1858.

Methods of Killing Lepidoptera.—The readers of "The Naturalist" must be much obliged to Mr. Crewe for the benefit of his experience in killing moths, as given at page 261. My experience has caused me to decide in favour of chloroform and a saturated solution of oxalic acid; the former only to quiet the moth, the latter to kill it. A camel's-hair brush dipped in chloroform will settle half-a-dozen moths by inserting a little in each box and closing it tight again. In half a minute you can pin and kill them quite comfortably. I use a sharp-pointed quill, which I prefer to a steel pen, for pricking in the solution of oxalic acid. Mr. Crewe admits that ammonia would spoil many species, and enumerates twenty-six which must not be killed with it; and for these exceptions recommends what I think good for *all*. It appears to me very disadvantageous to be burdened with two sets of apparatus when one set would do, especially when travelling. The time lost in using the ammonia appears to me the great objection to its use. Mr. Crewe says, "leave the moth half an hour exposed to the ammonia." From his own experience, given in the previous number of "The Naturalist," at page 237, a "good dose" for *two hours* did *not* suffice to take the lives of *Rhamnaria* and *Vetularia*. This loss of time would not suit a collector who had been out all day, and brought home a hundred specimens or more, all to be pinned, killed, and set out the same evening. Should there be compensating advantages attending the use of ammonia, I hope Mr. Crewe will make them known.—T. CHAPMAN, Glasgow, November 13th., 1858.

I am a humble member of creation, and as such keep myself to myself, and do not intrude upon my fellow creatures; but I chanced the other day to be present at a large and influential meeting of "bloods," and cannot refrain from giving you an account of it. The assembly consisted of a large number of respectable insects, and when I name the Honourable *Rupicaprararia*, the very Reverend the Dean of Westwoods, (*D. applanata*.) and the various members of their families, as amongst the company, you will have no reason to doubt my assertion. The meeting was held in the branches of the celebrated Calthorpe Oak, more than four hundred persons being present; some sat on the branches, some fluttered in the air, whilst *Mrs. Cynips* and a few more made the most of the opportunity to lay the foundation of another brood. The proceedings were opened by *G. Stercorarius*, the public orator, who declared that "that meeting had assembled for the consideration of the question, 'How best can the insect world protect themselves from the assaults and encroachment of man?'" The discussion was commenced by the afore-mentioned Honourable *Rupicaprararia*, who said, drawing in his breath as he uttered the first word, in a manner similar to that in which I have heard members of the House of Commons do, "Sir, man is cruel; (immense cheering, clapping of wings, stamping of feet, etc.) man is arbitrary and proud. (Renewed and deafening applause, in which the *Bombyx* family, so noted for their lungs, took the lead.) Sir, (hear, hear!) Sir, (bravo!) Sir, (excellent!) Who, (in a voice of thunder) who dares to—" (ha, ha!) The speaker could not go on; the excitement was extreme. A thorough search was made throughout the assembly, but in vain. The culprit could not be found; but whether it was that the determination and energy of the constables, *Atropos* and his relations, terrified them, or that the effects of his first offence had satisfied him, certain it is, we were disturbed no more. The proceedings were brought to a close with the utmost order and regularity, and the orator pronounced, with that fluency of speech and elegance of diction for which he is famous, the following resolution:—"That it is the unanimous resolution of this meeting, that in future any insect who allows himself to be caught by man, is a fool."—CETONIA AURATA.

Ravages of the Halticæ, (Turnip Flies.)—It is well known that these little Coleoptera, with which agriculturists are familiar under the names of Tick, Plant Lice, etc., are a real scourge to the growers of rape seed, and the cultivators of vines, gardens, etc. This year one of the same species has very much injured our forest oaks, as I have been informed by M. Vicaise, the chief administrator of the domains of the crown, and by M. Pissot, the conservator of the Bois de Boulogne. The larvæ of this species, (*Graptodera erucæ*, Fabr.) divest the oak leaves of the whole of their parenchyma, till they appear like lace-work, just in the same way as those of the *Halticæ* attack the vines in the south. All these species so nearly resemble each other in the perfect insect, that they have been blended together by various authors, under the name of *Haltica* (*Graptodera*), the *Olerucea* of Linnaeus. I have long hesitated about separating them specifically, merely on account of characteristics of trivial importance, but a close study of their habits, and above all of the larvæ, has shown me that there are many distinct species,

characterised by the larvæ and by different perfect insects. I have endeavoured to define these species in my article "Altise," in the "Encyclopédie de l'Agriculture," published by M. M. Firmin Didot, and I have established two distinct species, for the *Halticæ* which attack vines, and those which live upon a thistle, very common in the same localities. These are the characteristics extracted in an abridged form from my article:—*Graptodera amphelophaga*.—Larger than the true *G. oleracea*, of a greenish blue colour, and differing from it in the frontal keel of the head, which while it reaches nearly to the edge of the clypeus, is thicker towards the base; and by the anterior angles of its corselet, which are rather enlarged and rounded before, thus forming two little projections. *Graptodera carduorum*.—Smaller than the preceding insect, and larger than the *Oleracea*; of a beautiful shining blue. Frontal keel beginning as high as the insertion of the antennæ, and descending towards the clypeus, ending before reaching its edge at a transverse keel, which is parallel to the clypeus; this keel is thicker above. Anterior angles of the corselet without any projection; punctuation of the elytra delicate and vague, nearly effaced behind, etc. I have given further details of these species, and descriptions and drawings of their larvæ, comparing them with those of *A. oleracea*, in the "Encyclopédie de l'Agriculture."—F. E. GUERIN-MENEVILLE. From the "Revue de Zoologie" for October.

NOTES OF AN EXCURSION TO GLASTONBURY, WELLS, AND THE MENDIP HILLS.

BY W. V. GUISE, ESQ., F. L. S.

It has always appeared to me that there is between natural and antiquarian science, if not a degree of kindred and consanguinity, yet certainly such a measure of congeniality and accordance, as renders the one in a high degree compatible with the other. For myself I may confidently aver, that I have found in the pursuit of antiquities and heraldry, a pleasure only second to that which I have derived from the study of nature herself. Whenever therefore an opportunity offers of combining the two, I rarely neglect to avail myself of it, and thus, when from weather or locality, the one subject of inquiry fails, it seldom happens but that the other affords me ample matter for interest and investigation. It was, therefore, with reference to both these objects, that on the 22nd. of July I joined the members of the Archæological Institute in an excursion to Glastonbury Abbey and Wells, with a view to extending my researches afterwards in the direction of the Mendip Hills, and of examining the Cheddar Cliffs, and some of the more noted caverns with which those hills are perforated.

A tolerably large number of archæologists mustered at the station at Bath, and departed by the nine o'clock train for Glastonbury. The sky

was overcast and lowering, and ere we had reached the Highbridge Junction, gave evil augury for the future, and threatened to throw a damp upon our proceedings, if not upon our enthusiasms.

From the junction to Glastonbury the rail traverses a perfectly flat alluvial tract, intersected by ditches and streams, and even now so little elevated above the sea-level, that a permanent depression of a very few feet would suffice to restore it to that condition of marsh and lake—"a place for the bittern and pools of water"—such as it doubtless was "in the days that were," ere yet Joseph of Arimathea had set up his staff at Glastonbury, and had obtained from the British king a grant of the site upon which the abbey was afterwards erected. We are told that it was known to the Britons by the name of "Ynswytryn," or the "Glassy Island," and as the place of interment of the renowned King Arthur, it has still a hold upon our imaginations, which Tennyson's noble poem of the "Morte d'Arthur," will never let die.

Our train was slow, and as it passed leisurely along the sedgy banks of the stream which flanked the course of the railroad, I had time to notice many pretty plants, whose blossoms added the charm of colour to the otherwise rather sombre landscape. Every hedge-row glowed with the rosy spikes of the Rose-bay Willow-herb, (*Epilobium angustifolium*), which had evidently found a congenial habitat, and flourished in profusion. The Flowering Rush, (*Butomus umbellatus*), the Arrow-head, (*Sagittaria sagittifolia*), and the Yellow Water-Lily, (*Nuphar lutea*), were amongst the most conspicuous of that fair floral array which

"In every place,
In every season, fresh or fair,
Open with perennial grace,
And blossom everywhere."

The exigences of the rail necessarily limited the time allowed to the archæologists for their inspection of the remains of the Abbey and the exquisite chapel of St. Joseph, together with the Abbot's kitchen and the Tithe Barn, the latter a noble fourteenth century structure, but this scanty leisure was still further curtailed by the unpropitious aspect of the 'skyey influences,' which favouring no longer the happy 'valley of Avilion,' where, as the poet sings,—

"There falls not rain, nor hail, nor any snow,"

poured forth a repeated succession of storms of rain, which upon our arrival at the 'Barn,' increased to a decided down-pour, and put to flight a whole bevy of fair nymphs, who, with garments raised mid-leg high, flitted away to shelter through the long wet grass in a manner remarkable to behold.

Here I bid farewell to the antiquaries, and took flight for Wells, where the examination of the gem of a cathedral, and of the scarcely less inter-

esting remains of the ancient palace of the Bishops, occupied me throughout the afternoon. The garden attached to the Bishop's Palace is kept in most beautiful order, and exhibits many rare exotic trees and shrubs in high beauty and luxuriance, the ample foliage of which, together with the brilliant colours in the tastefully-arranged parterres, contrast most harmoniously with the time-worn walls and ivy-crowned ruins of the ancient episcopal hall.

The range of the Mendips consists chiefly of the mountain limestone, of the carboniferous series, and as is commonly the case in that formation, is perforated by numerous fissures, which at the junction of the limestone with the inferior beds, frequently assume the form of caverns, in which, by infiltration through the calcareous rocks, stalactitic concretions of singular forms are constantly developed.

The cavern at Wookey is one of the most extensive of these "sunless caves," penetrating the rock to a depth of two hundred yards; it is however by no means remarkable for its stalactites, in which respect it must yield the palm to Cox's cavern at Cheddar, which, though small, exhibits, in an exquisite degree, those strange fantastic forms, in which the freakish hand of Nature delights, as it were, to try its plastic skill in moulding shapes the most bizarre and quaint; or in a spirit of humorous travesty, counterfeits objects the most ordinary and familiar, as witness the 'string of five turkeys,' the 'loaf of bread,' and the 'fat goose' in Cox's cavern, which really exhibit a grotesque resemblance to the objects whose names they bear. Perhaps, however, the folds of drapery festooned from the fissures, and so thin as to be transparent, and the stalagmites rising to the height of six or eight feet from the floor of the cave, perfectly cylindrical, and preserving throughout a diameter of little more than an inch, are amongst the most remarkable of these petrifications. But when we come to reflect upon the lapse of time which must have passed since, drop by drop, these marvellous forms have been elaborated, the mind is lost in the vast perspective, and endeavours in vain to realise the moment when the drop of water, which, at intervals of half-minutes, falls 'drip,' 'drip,' upon the apex of that slender column, was first precipitated from the newly-opened fissure above. In spite of the theory of 'prochronism' in creation, I must take leave to entertain the opinion that these concretions date their origin from a period far anterior to the appearance of Adam upon the earth; and yet, geologically speaking, they are of comparatively late date—late, that is as compared with the vast thickness of the underlying strata, since the gravel upon which they rest on the floor of the cavern is undoubtedly attributable to the 'newest tertiary' period.

The cliffs of Cheddar reminded me strongly of those at Matlock, in Derbyshire, to which they bear considerable resemblance, as well in external

grouping and elevation as in lithological character; but they are inferior, inasmuch as they are deficient in the wood and water, which constitute such valuable adjuncts to the picturesque appearance of the latter.

I was tormented—almost past endurance—by a crowd of importunate women and boys, who lie in wait for passengers at the entrance of the defile, and plague them to purchase roots of the Cheddar Pink, (*Dianthus cæsius*), which they cultivate for sale. I believe the plant has been quite eradicated from all accessible stations on the rocks, though doubtless on some of the loftier precipices a few scions of the old stock may yet retain a firm and impregnable hold, where urchin's foot dare never venture, nor hand of botanist intrude.

The Lesser Meadow-rue, (*Thalictrum minus*), grows in profusion upon the rocks, and *Polypodium calcareum* at their foot. *Argynnis Adippe* was in swarms on the upland pastures.

Between Cheddar and Yatton, at which point I rejoined the Great Western Railway, the country is of a highly interesting and diversified character, the road traversing the flanks of the Mendips, which it crosses a little beyond Axbridge, overlooks a wide extent of rich pasturages, level as when the waters of the 'tertiary' sea washed the base of the hills, but having the uniformity of its surface perpetually varied by rounded monticules,—'outliers' of the 'lias' or mountain limestone, which formed islets or shoals in the retiring waters of that ancient ocean. Occasional openings afforded distant peeps of the Severn, and the Welsh hills beyond; while the elevated outline of the Quantock Hills beyond Bridgewater closed in the perspective towards the south-east.

I was greatly struck with the air of comfort and cleanliness in the villages through which I passed, in which the comeliness of the population likewise formed a very noticeable and pleasing feature; for natural beauty is never more admirable than when exemplified in the human subject; but more especially so when it forms the type of a class, and is not the mere distinction of a family or an individual.

With my arrival at Yatton terminated my short excursion into Somersetshire. The district which I visited is indeed full of objects of deep interest, and deserved, had time been permitted me, a more lengthened pilgrimage. I have however thrown together these few notes in hopes that they may interest some amongst the readers of "The Naturalist," to whom the opportunity of visiting these delightful scenes is denied, or may serve to induce others, having more leisure at their disposal than I had, to follow in my footsteps,—in either case this short notice will not have failed of its intent.

Elmore Court, August 2nd., 1858.

Miscellaneous Notices.

Occurrence of the Marsh Harrier on Pevensey Levels.—Mr. Albert Vidler, (an excellent shot and naturalist of this town) shot on Saturday last, October 2nd., in Pevensey Marshes, a remarkably fine specimen of the Marsh Harrier, (*Circus æruginosus*.) It was in very fine plumage. The crop was very much distended with the remains of a bird, apparently a Moorhen. Mr. V. says he has often seen them in the marshes, but never shot one before. The same indefatigable naturalist brought me to-day, for inspection, a fine Lesser Black-backed Gull, (*Larus fuscus*), shot by one of his father's men the day before, in Pevensey Bay.—JOHN DUTTON, South Street, Eastbourne, October 11th., 1858.

Honey Buzzard.—Captain Richardson's gamekeeper killed at Sutton Hurst, in the parish of Barcombe, on Monday last, a splendid specimen of the Honey Buzzard, apparently a very old bird.—G. GRANTHAM, Hove, October 9th., 1858.

The Partridge.—I have killed on an adjacent estate, in the same parish, several of the Common English Partridge, having a perfectly white-coloured horse-shoe on the breast instead of the usual-coloured one, during the present season. On Wednesday last, I killed in the adjoining parish, Isfield, a white Partridge, the feathers having the usual markings in the same way as a damask table-cloth or the White Peacock; and a brace of Partridges from another covey having the white horse-shoe. G. Molineaux, Esq., of Lewes, had previously killed two white varieties at the commencement of the present season. I know not if the peculiarity mentioned has been noticed elsewhere; none of the Brighton game-dealers have had any specimens, or have they ever seen or heard of such instances before, and I presume it is almost, if not quite, a local affair.—Idem.

Rare Birds.—The following rare birds are in my possession for preservation:—A fine old male of the Pomerine Skua, (*Lestris pomarinus*), a very rare bird in this quarter: it was found dead on Skipwith Common, and sent to me by Colonel Drummond, who found it there. A fine specimen of the Yellow-Shank, (*Totanus flavipes*), shot near Tadcaster, by N. B. Thompson, Esq.: it differs a little from the description in Morris's "British Birds," the length being ten inches and a half, weight three ounces, wings, when extended, twenty inches: it is a female, and in fine plumage. A pair of white Partridges, shot at Huggate, by Richard Christie Esq.: they are pure white—not a speck on them. It is very singular that at Kirk Hammerton two white Swallows have been shot by Colonel Thompson.—DAVID GRAHAM, Market Street, York, October 17th., 1858.

The Wood Sandpiper.—A male specimen of the Wood Sandpiper, (*Totanus glareola*,) was shot at Barr, a few miles from here, on the 26th. of August. It is now in the possession of Mr. Charles B. Hodgson, of this town, to whom it was presented by the gentleman who shot it.—HENRY BUCKLEY, Church Road, Edgbaston, Birmingham, October 15th., 1858.

Proceedings of Societies.

Thirsk Natural History Society.—*Botanical Exchange Club*.—The monthly meeting of this Society was held on the evening of Wednesday, the 1st. of September. Mr. J. G. Baker communicated a paper on a *Barbarea* which has been found in several places in the neighbourhood of Manchester, which he identified with *B. intermedia* of Boreau, a plant of France, Belgium, and Italy. It occurs in waste ground and cultivated places, and may be known from *vulgaris* and *stricta* by its *præcox*-like leaves and short styles, and from *præcox* by its more robust habit of growth, and by its closer and more numerous styles, which are only about half the size of those of that species. He explained, also, that *Aremonea agrimonioides* and *Potentilla hirta*, two plants which have been published from Perthshire, had owed their introduction to horticultural operations.

The Querist.

At what elevation above the sea is the Mushroom, (*Agaricus campestris*,) found in the North of England?—On the 11th. of September last, whilst exploring the slopes of Old Cote Moor, near Arncliffe, in Craven, I gathered several well-grown Mushrooms in the 'rough pastures' just below the 'heather line.' Having the Contoured Ordnance Survey with me, I found that these fungi were flourishing at fourteen hundred feet above the level of the sea, and it would be interesting to know what is the greatest height at which your botanical correspondents have found them.—EDWARD JAMES MAUDE, The Old Hall, Knostrop, Leeds, October 7th., 1858.

Can any naturalist inform me of a good plan of cleaning large shells, to prevent their having a putrid or offensive smell. I have several very large specimens of *Fusus antiquus*, which I cannot place in my cabinet from not being able to clear them thoroughly from smell. I should be glad of any opportunity of exchanging shells.—C. H. BROWN, Southport, Sept. 3rd., 1858.

Can any of our entomological readers tell me what the larva of *Eubolia cervinaria* feeds on, as I have some eggs of the moth, and should wish to know against the time they are hatched.—F. O. MORRIS, Nunburnholme Rectory, November 2nd., 1858.

[The eggs of *E. cervinaria* will hatch, if kept in a cool place during winter, next spring, and the larvæ will feed upon the Common Mallow, (*Malva sylvestris*,) or if this plant is not at hand, they will eat readily the leaves of Hollyhock.—ENT. ED.]

NATURAL HISTORY OF SUNNINGHILL.

BY O. S. ROUND, ESQ.

(Continued from page 271.)

CHAPTER VIII.

BEFORE I proceed again into detail I may as well conduct my readers from the scenes which I have attempted to describe, to those changes which time effects in a wild and open country, such as this was. And now that the glorious panoply of armed hosts had deserted these quiet scenes, no more to resound with the hoarse voice of the trumpet or the shrill neigh of the charger; now that the gallant throng of mounted Nimrods, led by their fine old monarch, with his burly presence and sonorous voice, from which the ample and laced coat, the cocked hat and wig, detracted nothing, had ceased to sweep the plain to the clear music of the hound or the cheering cry of the huntsman, a change came o'er the scene, and that free air of liberty and wild unrestraint which had so long marked the region for its own, was doomed to be for ever banished. An act was passed for inclosing the royal forests, and as these plains were considered within the limits of that of Windsor, they were included in its operation. Several wealthy individuals became large purchasers of the crown lands, and to one in particular, who possessed already a park, situated between that portion called "Beggar's Bush" and that designated "Cheapside," nearly a thousand acres of the waste was allotted. My grandfather, among the rest, obtained a grant in respect of his cottage residence and clump of beeches. Some allotments were made to St. John's College, Cambridge, and the Bagshot Estate, and government allotments monopolised the rest of the open ground, the morasses, which I have particularly spoken of, being reserved to the parish of Sunninghill, for the use of the poor, and to remain unappropriated for ever.

These proceedings were a sad blow to many of the lower class of inhabitants, who had hitherto lived, it must be admitted, in a very lawless manner, little better in their ideas of right and wrong than the merest savages; they had roamed at will over the whole expanse of moor; shot, for being free forest it could scarcely be called poaching; hunted, cut turf or heath, or, in fact, did whatever they listed without being in any way called to account for their actions, and therefore when an ownership was exercised over it, and they could no longer enjoy their accustomed immunities, they felt it deeply. Nor did they succumb without a struggle, indeed it was long before the law being put in force, could convert them into civilized subjects. Time, however, has now worked its way, and although up to a late period there was a sad set of

poachers and vagabonds, who lived no one knew how, (although they shrewdly suspected,) the race may be said to be nearly extinct, and the numbers are no greater than are usually found in every village.

The appropriation and division of the common ground soon shewed itself; workmen were employed to throw up banks, sink ditches, and plant the crowns of the hills; and broad belts of incipient woods formed lines of demarkation, and of course on the government property this was on a large scale, but not until many years after, although the government banks were "stickers" to the followers of the chase, and it took a bold man and a good horse to jump them. The greater part of Sunninghill was purchased by a gentleman named Simpson, an East India merchant, and formed an estate known as Sillwood or Sellwood Park, containing about eleven hundred acres, nine hundred of which were waste; this was laid out with admirable taste, and was kept up for many years in beautiful style: it has since changed hands, a railway bisects it, and all those changes which years effect have taken place. The village, then consisting of but a few houses very much scattered, has become tolerably populous, the people not being remarkable for any particular trade, except that, I grieve to say, in common with many others in England, the "Beer Act" has had the most baneful effect, and "Tom-and-Jerries," as they are familiarly called, have spread drunkenness and ruin chiefly among the youth of the parish. Of course there are the usual amount of small shops, and one of some pretensions, established in 1780, could produce, I believe, any article you chose to ask for in any department, commencing with "Irish Butter" and ending with "Books Neatly Bound!"

The view from some parts of the village is exceedingly picturesque and extensive, looking into the Surrey country from Epsom Downs to Guildford, which is hidden from the prospect of the village itself by some high heath hills, known as Ribsdow; from the summit of these the view is almost unrivalled. You appear to look down into a garden, the fields around and beyond the town of Chobham being seen in miniature from that elevation. Guildford with its ancient towers of St. Mary's and Chantry Down is distinctly visible, and you look along the whole ridge of hills covered with cultivated fields, which extends to the "Devil's Punch Bowl," and then "Hind-head" and "Black Down," and known as the "Hog's Back." To the west and north you look over the whole expanse of moorland country which I have described, and beyond it rise the blue hills of Buckinghamshire, marked by the hill above High Wycombe and those eminences which lie just within the boundary of Berkshire, at a place called "Wargrave," near Henley-on-Thames. North-east, Windsor Park looks like [a soft moss-bed, and west rise the rugged and pine-clad ridges of Bagshot Park. Due east the valley where London lies may be

distinctly traced by its film of vapour rising as from a cauldron, and a nice hotbed of iniquity it is. To the left of Guildford, Leith Tower and the large group of beeches on Hedleigh Down are distinctly visible; and over the Bagshot Hills Crooksberry Hill, near Waverley, in Hampshire, rises in the blue distance.

ON UNITY OF SYSTEM.

(Continued from page 106.)

THE observations on this subject offer the following conclusions or suggestions, which may afterwards be more fully illustrated.—There is one Supreme Deity who fills all space and all creation, to whom belongs all power, who never changes, and of whom is all creation and every single creature.

Accordingly it is stated that the existence of all the visible creation, and of every creature separately, begins in the Deity and ends in Him; and thus the present life of each is imperfect, both in itself and as forming only the middle part of the system, the beginning and the end being wanting. The Deity still continuing one, and His power in every creature not being separate from Him, it may be inferred and is clearly proved by observation, that every creature exhibits in itself the whole system, though as variously as the structure is various,—thus illustrating the beginning and the end in combination with the middle part. This Being, whose perfection is infinite, is thus the source of all, and why all creatures do not share His perfection, but are all variously imperfect, is a mystery for which there is no explanation but by the Bible, where it is partially revealed.

The present creation, by which time and space are measured, may be said to hide eternity and infinity, which are wholly incomprehensible as such, and cannot be manifest until it cease. Though the term millions were continually doubled in speaking of the ages of creation, still time, when so measured, is wholly distinct from eternity, as it can neither add to nor diminish from it, and the same may be said in reference to the distinction between space and infinity. The term millions of years may comprehend some of the later and shorter periods of creation, but the earlier epochs were exceedingly longer, so as not to be definitely expressed by numbers, and the changes since the creation of man have been successively more rapid.

The system of creation, wholly and in all its details, or collectively and particularly, was pre-ordained before the beginning of creation, and all the events of the same, from the beginning to the end were foreknown, and

have perfectly conduced to the end purposed. The perfect simplicity of this system is evident, and the greatness of the wisdom and of love displayed therein will be more apparent in proportion as it is more deeply studied. The Bible comprehends the outline of nature and of the history of mankind from the beginning to the end, and both it and creation and human history are full of figures and illustrations of the whole system, or of the present life and creation as the middle part, and of the eternal life as the beginning and the end, by which and for which nature exists, and to which it will be transferred.

The system or ordaining of creation commenced with the distinction of the eternal life from the source, and will end with their re-union, and some part of the present creation will then be in the place of eternal life with relation to the source. The next process was the predetermination of the suppression of the eternal life, and the whole order of the creation which ensued is dependent on or in subjection to this previously-formed plan, and all the parts and occurrences in creation, past, present, and future, were wholly foreseen, and are all conducive to the end of the suppression of the eternal life. The term "suppressed," or "slain," may be better understood by describing the eternal life as converted or changed into the natural life, and then assimilating or organizing matter for the various forms in which it appears. The bodies of all living visible creatures are adapted to and organized by this spirit in its natural state, which may be termed a divergence from the eternal life, the latter continuing suppressed in it. By this suppression the creature is wholly distinct from the Creator, who alone opens the communication whereby the suppression ceases, or the conversion of the natural life into the eternal life begins.

All creatures (plants, animals, man,) have a common origin, from whence they are gradually distinguished by their organism or acquisition of character, and all divergences and their consequent degradations are necessary for the development of higher degrees. The structure of all kinds of creatures is alike at the beginning of their existence, and the difference between the highest and the lowest in their perfection consists in the structure of the highest being wholly undeveloped and invisible in the lowest, while the structure of the lowest is wholly degraded and partial in the highest. As all the early epochs of creation were subservient and necessary for the establishment of the later periods, and all of them requisite for the present one; so also all the epochs of mankind, and the successive progress and removal of nations have conduced to raise man to his present level.

As before observed all nature is full of more or less complete illustrations of the whole system of creation, and the beings of each epoch

represent each dominant nation, and the power which is destined to succeed it; one group of creatures being wholly developed and supreme, but afterwards degraded and dwindling away, while some of those which were in subjection represent another group, which in their turn are developed and predominant. There are properly no degrees of perfection in the range of creatures; the development of each kind and that of each class is by a divergence, and they are not only brought on one level by having a common origin and a common incipient structure, but the peculiar perfection of each species or class is degraded in the species or class which is immediately superior to the former. This plan is continued throughout the range, the development in every division being by divergence, and the elaborate structure and beauty of the lower classes being more and more obliterated in the successively higher classes up to man. Thus the higher creature not only passes through a transitory state, which is permanent in the lower creature, but combines in itself the structures of all the creatures below it, and in man, as the highest, all created life is concentrated, and in him all other visible creatures are degraded or brought back from their several divergences.

The interest in the knowledge of all kinds of creatures may be much increased by the fact of their all being manifestations and progressive means of the one spirit, and that each kind has its perfection, which character diminishes more and more in other creatures in proportion as their structure is more remote from that of the above kind. This change in the structure of a creature is attended with a proportionate change in its impulses, habits, circumstances, and its consequent use in creation, thus proving that the variation of the spirit, whether its manifestation be defined as reason or as instinct, or described by some other name, is wholly dependent on organization.

THE ENVIRONS OF BATH.

BY T. FULLER, ESQ.

(Continued from page 224.)

IF any readers of "The Naturalist" have favoured me with their company thus far, they will have seen that there is no pretension to give any topographical account of the Environs of Bath. The only purport of these crude remarks being that of noting down such features in Natural History as might occur in various rambles, and appear to an admirer of nature, like myself, worthy of communication.

The swallows appear now to have all arrived, and are busily and usefully employed throughout the long days. The swifts are very numerous,

and most conspicuous. On the afternoon of the 25th. of May, in my walk by the side of the Avon, beginning with the point where Lock's Brook joins, and following the towing-path down the river, my attention was attracted by the number of these birds. The country-people here call them "Screechers," or "Screech Martins." The difference in their motions on this occasion from what I have previously observed upon their first arrival and up to the present time was very remarkable. They were then silently and swiftly cutting through the air, and skimming over the fields in graceful sweeps and turns in pursuit of food. Now they were darting and wheeling in flocks, with shrill screeching notes, thrilling upon the ear as they rushed past with the rapidity of lightning.

On the opposite side of the river is the parish of Tiverton, and at a short distance below is the village, with its large clothing manufactories close to the water. The machinery of these establishments, and of other mills on both sides of the river, is driven by the power of two water-falls, produced by two weirs built across the stream; over these weirs the river tumbles in white foam and continued roar. For the purpose of carrying on the navigation traffic a canal is made to avoid the weirs, with suitable locks for raising and lowering barges from one level to the other. This canal is cut through the land on the Weston side, and the piece so separated is called the Weston Island. The towing-path being by the side of the canal, the pedestrian in his progress down loses sight of the river and of the upper weirs, which are hid from sight by the buildings and trees upon the Island, and it is not until he arrives at the lower end of the canal, where it again joins the river, that a view of the lower weirs is obtained, over which the river is seen tumbling in one broad sheet of white foam. The appearance of falling water is an agreeable addition to a landscape, and the sounds of this and the upper weir mingling together are pleasing and soothing to the ear; the spectator hesitates to leave so attractive a spot; but upon this occasion my attention was diverted by the noisy active motions of the myriads of swifts, as they chased in flocks over the broad basin into which the river tumbled, their dinning, screeches were heard above the roar of the waters. After watching them for some time I resumed my walk down the towing-path. The village of Tiverton terminates at the lower weir, and is followed by a thick plantation of forest trees, rising in bold elevation to the summit of a commanding hill.

The beautiful variety of shades in the different species of firs and other trees, with their tops shewing above each other as the hill rises from the river like an extended amphitheatre, is seen with great advantage from the towing-path, and at this time with additional pleasure from the chorus of the feathered inhabitants, which floated in the clear air across

the water, and became more distinct as the distance from the water-falls was increased.

Surely, thought I, the Nightingale must be amongst these numerous musicians, and during the charm which now prevails his notes will be heard more distinctly nearer to the wood; but to get there the river must be crossed. There are two ways of accomplishing this, one of which is to follow the towing-path to a stone bridge a considerable distance down. The other is to turn back and cross over by a ferry a little way above the place where the canal first branches off from the river. The first route is the most attractive, the winding course of the river, skirted on the north side by the rich woods and plantations of Kelston, presenting endless variety of charming views at every turn of the stream; but having already taken the reader in this direction, and as the sun is now nearing the horizon, and will have disappeared before so long a walk as to the bridge and back on the other side to the desired spot, can be accomplished, we will adopt the latter route and haste to the ferry above. This is soon done. The ferry-boat is moored on the Tiverton side, but there is no delay, for at the first summons a lively old woman issues from the house, wipes the washing-suds from her arms, and trips into the boat. This ferry being near the fork of the river and canal, the water is necessarily broader than at other places, and the current of both streams being arrested by the weirs and locks, the surface, unless agitated by wind, is tranquil. On this occasion not a breath of air was stirring, and the water was smooth as glass. The ferry-rope passed rapidly through the old lady's nimble fingers, the boat glided swiftly over the placid stream, and soon returned with me to the Tiverton side.

The road through the dusty village of Tiverton seemed unusually long, but the fatigue of the walk was amply rewarded upon arriving at the plantation. The sun was still above the horizon, shining with unclouded splendour. A perfect charm prevailed, the plantation rung with every variety of note, Blackbirds and Thrushes were in full song, every now and then a restless Cuckoo, after shifting from tree to tree, would issue forth and flap his long body over to the Weston side. As the sun gradually disappeared below the horizon the tops of the trees retained for some time a golden tinge, slowly lessening to a thin crimson-tinted fringe upon the top of the hill, which passing away, soft twilight crept over the scene. The Blackbird now changes his note to the harsh chirping call to nest, other birds become silent, and the song of the sweetest of all our warblers is heard in perfection, there is no mistaking his "jug, jug."

After listening for a considerable time, delighted with the wild notes of several Nightingales, as they answered each other from various parts of the plantation, I returned my way back through the village, and was

again ferried over the river. Tranquillity still prevailed; the sky bright and clear; the moon, nearly at the full, shone with silvery lustre; no mist or vapour hung over the river or meadows. It was scarcely twilight, and every object around could be distinctly seen. Numbers of birds were still flitting over and about the river, but I did not notice them particularly until after quitting the boat, when I was puzzled in thinking what species they could be of; surely not of the Swallow tribe, although they wheel about and flit upon the water, their motions are different and slower; besides, thought I, my friends the Swifts must be all thoroughly tired and gone to rest. Upon closer observation I was satisfied they were all Bats. I never before saw so many of these animals at one time—where could they all have come from? Probably they all congregate under the extensive roofs of the clothing mills, or in the deep banks of the river and canal, and are now induced to come out by the fineness of the evening. They appear to me larger and longer in the wings than any I have noticed before. I must inquire more about these same Bats.

REMARKS ON THE ROCK DOVE, WITH REFERENCE TO ITS CLAIMS AS A SPECIES.

BY HENRY PAYNE, ESQ., M.D.

IN the domain of ornithology there is no more difficult question for the naturalist to determine than the differences of species, so endless is the variety one meets with in particular species. There are birds marked as distinct from each other, on apparently fallacious grounds, and when I read the descriptions of them I think I see a well-defined species; but after maturer study the supposed species dwindles into a mere variety. This has been particularly the case with the so-called Rock Pigeon, a variety of the genus *Columba*, which may be traced to the agency of arts, under whose tuition nature can assume we know in this genus and the allied gallinaceous birds, variations in shape, size, and colour, which never fail to delight every one, but which lead the scientific inquirer sometimes into a labyrinth of perplexities and “historic doubts.” Should a bitch by any accident lose her tail, she may have puppies without tails, but we have no right on that account to proclaim the occurrence of a new species. Most of the wild or farm Pigeons have a white patch over the loins—a mark of domestication, but all are not so distinguished. You shall see some of the brown ones and dark blue ones without a single white feather over the rump. Besides if so trifling a mark is to be taken as diagnostic of species, we shall have no end of them. The little Sparrow-Hawk, with plumage like a Cuckoo’s, and no brown about it, would rank as a separate species; so it

might be said of the Ring-necked Pheasant, common in certain districts.

Formerly a Wild Cat was described and figured of a beautiful striped grey colour. Now you will be told that Wild Cats are found grey and white, yellow, or black; whereas the truth is that "Wild Cats" of these piebald colours are, to use a botanical phrase, "Garden escapes," although leading a life *naturâ fera*, and not the British Wild Cat, but hybrids of domesticated sorts, possibly of them and the Wild Cat.

We cannot allege any difference between the Rock Dove and Stock Dove in the matter of perching, for I have repeatedly seen our farm-Pigeons, which are the Rock Doves, perch on the large branches of our forest trees. Again in the choice of a place for building you will find the Stock Dove generally selecting a bank for its nest, and sometimes the hollow of a tree. True, I am not writing from experience, for never having seen a Stock Dove, if our Rockier be not one, I possess no means of ascertaining the fact, or its real place of abode and nidification. Not having therefore practical experience, I can only indulge in theory to clear up a doubt which has long been on my mind as to the identity of "a Pigeon building in caves, and never alighting on trees." I feel some hesitation in indulging such a doubt. There is something so pleasing to the imagination to hear speak of "a little blue Pigeon never alighting on trees." Apropos of its littleness about which any one versed in the Rock Pigeon theory will tell you is a characteristic mark; go to the "History of British Birds," you will there see, under the head Stock Dove, "Male, length one foot two inches;" under the Rock Dove, "Male, length one foot two inches." The histories also say that the Rock Dove has a patch of white over the tail. Mine, which came direct from Robert Dunn, of Stromness, hold it in what attitude you choose, and I have for this reason set it flying, shews no white feather at all; all the feathers, from the shoulders to the tail end, (where they are dark grey,) are of a pale blue colour. I know of only one station for the "Rock Dove" in this locality, and that is the limestone cliffs at Wentvale, about four miles from Pontefract, where they breed.

Were I to be shewn a blue Wild Pigeon, with a white rump, I should say that either it or its progenitors had been bred in a dove-cote, but was of Stock Dove extraction, which is probably the origin of our blue Pigeons, wild and tame. This white-rumped blue Pigeon, that breeds in our sequestered rocks, banks, and caves, be they of chalk, lime, or sand, be they high or low, by the sea or inland, has, I dare almost affirm, Stock Dove blood in his veins. Either the older naturalists have overlooked it as a variety, or it has taken up its abode exclusively in rocks, only because it has been taught to live amongst stone and lime by its protector man. I incline however to the latter opinion, and must do so till we can discriminate between it and the Stock Dove. He is in short a cosmopolite dwelling in a bank, a cave, or a tree, as fancy leads. Thus in this part

of the country he usurps the right of his ancestor the Stock Dove, who, amid all our flights and sights of the Pigeon tribe, is never heard of, because the claims of the latter have been set aside by a petted upstart and pretender.

Barnsley, Smo. 27th., 1858.

[I cannot coincide with Dr. Payne in the opinions he has expressed about the Rock Pigeon. I do not see how the "agency of arts" can be traced in a thoroughly wild species, nor can I consider the white mark over the tail a "trifling" difference. If, in the wild bird, to say nothing of the domesticated one, the mark be "semper, ubique, et in omnibus," it is amply sufficient as a specific distinction.

I do not understand the remark about the Sparrow-Hawk. I suppose Dr. Payne does not mean to assert that it too is not a species; neither can I understand how he can "think he sees a well-defined species" on "apparently fallacious grounds." Dr. Payne says that he has never seen a Stock Dove, unless the Pigeon that builds in cliffs near Pontefract be one, (which I am confident it is not,) and yet he asserts that it generally builds in banks. It does build in rabbit-holes sometimes, but he does not name these, and I am aware of no authority for the mere bank. I think he never heard of the tame Pigeon doing so, which on his theory it ought to do. As to the notion that the young of a dog which had lost its tail, might possibly for that reason be tailless also, I think I need say nothing.

As to the so-called Wild Cats, I should suppose that no one, not pretending even to be a naturalist, would confound the common Domestic Cat run wild with the Wild Cat, "figured," and properly figured, "of a beautiful striped grey colour," beyond allowing that it had originally come down from that stock. Again, if Dr. Payne quotes from my "History of British Birds," his quotation of the relative size of the Stock Dove and the Rock Pigeon is not quite correctly given, the length of the latter being "one foot one inch to one foot two inches," which is not absolutely the same as "one foot two inches." The habits, I may add, of the two birds are totally different. I can only suppose that those which Dr. Payne has taken for Rock Pigeons, breeding near Pontefract, in the West Riding, may be tame Pigeons escaped from dove-cotes, which have taken up their abode there, and recovered somewhat of their original nature and habits, those of the Rock Pigeon. Lastly, I cannot understand what Dr. Payne means by saying that the older naturalists have "overlooked as a variety" a bird which they have described as a distinct species; nor again how the Rock Pigeon can have made the rocks and cliffs its dwelling-place because it has been "taught to live amongst stone and lime by its protector man."

—F. O. MORRIS.]

LIST OF LEPIDOPTERA OCCURRING IN THE COUNTY OF SUFFOLK.

BY THE REV. JOSEPH GREENE, M.A., ASSISTED BY THE REV. H. HARPUR CREWE, M.A.,
AND C. R. BREE, ESQ.

[The portions of these papers contributed by Mr. Crewe and Mr. Bree, are signed with the initials C and B respectively. N.B. at the head of a paragraph signifies that the remarks are made after those of Mr. Greene.]

(Continued from page 255.)

91. *T. cruda*.—Common of course. The caterpillar is very deceptive, at least in *my* case. The first time I found it was at Brandeston. It fastens two leaves together, lying curled up between them during the day-time. I thought it must be, at least, a good *Ceropacha*, and went on collecting them till I had "amassed" about two hundred. I shall not soon forget my disappointment, as day after day, my friend *Cruda* emerged. My suspicions had already been grievously excited, by observing that the larva entered the *earth* to effect its transformation; the whole of the genus *Ceropacha*, if I mistake not, spinning up between leaves, or in moss, etc. The larva is extremely variable, and though preferring oak, will readily feed on hazel and sawlow. The pupa may be found from the beginning of July to March.

N.B.—This larva appears more than any other to delude and annoy the collector. The protean variety of its colours beats all description. I found a variety here this year and last, which was pale green with a very pretty orange and red spiracular stripe. I thought I had got something good, and was most horribly disgusted when I discovered my mistake. In addition to its other troublesome qualities the wretched larva is a cannibal. (C.)

92. *O. epsilon*.—Extremely abundant at Playford, occasionally coming to light. I found the larva and pupa in the utmost profusion under decayed bark on willows and poplars, especially the former. Where no loose bark occurs, they enter the pupa state at the roots. The insect evidently prefers damp localities, in fact, I never met with it elsewhere.

N.B.—I have taken the larva of this insect in some numbers near Stowmarket, when sugaring just after dark, crawling up the pollard willows, and occasionally upon the stem of the black Italian poplar. It conceals itself during the day amongst the grass and roots at the foot of the tree, or under a piece of loose bark, and as soon as it gets dark, climbs up to feed on the leaves. It is a dark dingy blackish larva, and is full-fed about June 7th. It feeds most voraciously, and attains its full size with marvellous rapidity. It remains a very short time in the pupa state, sometimes barely three weeks. In confinement all my larvæ buried, and spun a cocoon under the surface of the soil. (C.)

93. *O. lota*.—Also common in the larva state. The egg would appear to be laid on the bud, as the larva is almost invariably found among the young

tender leaves, spinning four or five of them together when young. It afterwards conceals itself, eating only at night. It is a most voracious feeder. As a rule, I should say it prefers willow to poplar; I have not met with it on poplar.

94. *O. macilenta*.—Twice met with in the pupa state at Brandeston, and once at Playford. It is, I think, a rare insect in Suffolk. Freyer gives beech, (Manual, p. 246,) as the food of the larva. I should say birch, my pupæ being all found at the roots of that tree.

N.B.—I never met with this insect in Suffolk, but have taken it at sugar in Derbyshire and Hertfordshire, in October and November. It appears to be uncertain in its appearance. In 1854 I took it in the utmost profusion in the latter county, whilst the following autumn, though I sugared quite as diligently, scarcely one was to be seen. I do not know the larva. (C.)

95. *A. rufina*.—Rare. A few taken on nettles at Brandeston; among them was one specimen nearly black.

96. *A. pistacina*.—Common.

N.B.—I took the larva of this insect in some plenty this year, (1858,) at the end of May and beginning of June, by sweeping the mowing grass in the meadows round Stowmarket. It closely resembles the larva of *Hadena oleracea*, and is sometimes bright yellowish green, and at others reddish brown with black spots. It feeds voraciously upon the leaves of the three common Meadow Crowfoot, *Ranunculus bulbosus*, *acris*, and *repens*. It spins a very tight, neat earthen cocoon, in which it remains some weeks before assuming the pupa state. This cocoon when kept dry becomes exceedingly brittle. The eggs which I have had are laid in the autumn, and hatched in the spring. (C.)

97. *A. litura*.—Common. Frequently bred off willow.

N.B.—I have very frequently beaten this larva from oak, and bred the perfect insect. (C.)

98. *G. vaccinii*.—Common. During a recent visit to Suffolk, I dug up three pupæ at the roots of an elm. I never met with it in that stage before.

N.B.—I have bred both this and the following species from some dingy dirty brown larvæ, found feeding inside the catkins of willow in May. I have also bred the latter species from larvæ beaten from white thorn. (C.)

99. *G. spadicea*.—Common.

100. *S. satellitia*.—Plentiful. The larva of this species is very singular in its habits. I do not allude to its carnivorous 'propensities.' In this respect unfortunately it is *not* singular. Sometimes, when young, it feeds on trees, and afterwards on low-growing plants; at other times it appears to invert this order of things. I found a number of them last spring about half an inch long, feeding on the common primrose, but when placed in a box, containing leaves of the wych-elm, they immediately forsook the former and devoted their energies to the latter. Conceals itself during the day.

N.B.—I shall not easily forget the feelings of delight with which I captured my first beautiful black velvety larva of this moth, nor my feelings of disappointment when the perfect insect appeared. It is one of the most beautiful and uncommon-looking of all our British larva. (C.)

101. *X. citrigo*.—This highly interesting genus is well represented in Suffolk, as I have myself taken the whole six species. I bred the above several times, beating the full-fed larva from a lime in my garden at Playford. This appears to be a suitable place to make a few remarks on the habits of the larvæ of this genus. The general opinion seems to be, that when young they feed on the seeds of various trees, and afterwards leave them for various low-growing plants. That this is by no means necessarily the case, I have had abundant opportunities of proving. For instance, *Citrigo* was nearly full fed when beaten from lime, and in confinement they not only preferred that tree as food, but would not touch any other. At Playford I beat the larva of *Ferruginea* in the greatest profusion from the wych elm of all sizes, from a week old to their full growth. Again, the five pupæ of *Gilvago*, which I dug up this year in Derbyshire, were all at the roots of elm, there being no plants at all near. The same remark applies to *Xerampelina*. Indeed, with regard to this latter insect, I entertain little doubt that leaving the tree is the exception and not the rule. I must at the same time acknowledge that I have not succeeded in finding the larva. I am very anxious to know farther, whether the eggs of the different species in this genus hatch in the autumn or not? I believe the general idea is that they do not. My own impression is that they *do* hatch and hybernate. My only reason for thinking so is, that last month (October) I found, in beating some loose grass, weeds, etc., in a very small plantation, two larvæ of this genus, about half an inch long. I cannot state the species, as there were both ash and elm in the plantation, and the larvæ (when young especially) are so much alike, that it is difficult to discriminate them. My notion, therefore from this circumstance, is that the eggs are hatched in the autumn on the trees, and that just before the leaves fall the larvæ descend to hybernate among the weeds, etc., and in the following spring ascend them for the purpose of feeding again. This idea is much strengthened by the fact that *Ferruginea* (the only species, unfortunately, I can speak of from experience) may be found nearly three-quarters of an inch in length, when the buds of the elm have scarcely burst. These remarks are only intended to provoke inquiry, and I shall feel grateful for any information on the subject.

N.B.—I have not very frequently beaten the larva of this insect from *lime* in June. It is extremely liable to ichneumons. I have also dug up the pupa at the foot of the same tree, which is, I am convinced, its exclusive food. It is bluish grey, with a whitish spiracular line, and white and black dorsal dots. (C.)

102. *X. cerago*.—Scarce. On nettles. Brandeston.

103. *X. flavago*.—Not uncommon at Brandeston, at sugar and on nettles. I have frequently beaten the perfect insect from hazels. I bred some fine specimens this year, the larva feeding on primrose.

104. *X. aurago*.—Once beaten from an ash.

N.B.—I have very frequently seen this insect in Bucks. and Herts., flying rapidly backwards and forwards in the sunshine between four and five p.m., on the outskirts of the beech woods. These counties appear to be its head quarters. Maple, the food-plant of the larva, abounds in all directions. The

perfect insect is fond of resting in the day-time amongst the leaves of the ash, from which tree almost all my specimens were beaten. The rest were taken at sugar. (C.)

105. *X. gilvago*.—I did not meet with this species while residing in Suffolk, but during a recent visit at my friend's, the Rev. H. Bree, of Woolverstone, I dug up one pupa.

N.B.—This insect is by no means uncommon in the midland counties. I have taken it rather freely in years past in Derbyshire at sugar. (C.)

106. *X. ferruginea*.—Larvæ in great profusion on the wych elm, as noted above. I gave a description of it, (Int. June 20th., 1857,) supposing it to be *Gilvago*. The description given by Treitschke (Manual, p. 253,) is very inaccurate, and might do for anything. I do not know how it may be on the continent, but I am very sure that in this country the larva does not feed on the seeds of the *poplar*, but on those of the wych elm.

N.B.—I am myself inclined to think that the eggs of this insect do not hatch till the spring, and that if the larvæ hatch before the buds burst, they feed upon the bark of the twigs, which is rendered quite soft and tender by the rising sap. I have not unfrequently seen larvæ in the early spring feeding on the young bark of various trees and shrubs. The larva of this insect, like that of *A. pistacina*, does not assume the pupa state for some weeks after it has spun up. It feeds freely upon the seeds, and if they are scarce, upon the leaves of the wych elm. (C.)

REPORT OF SCIENTIFIC MEETINGS.

ACADEMY OF SCIENCES, PARIS.

FROM THE "REVUE DE ZOOLOGIE" FOR SEPTEMBER.

SITTING, September 6th., 1858.

M. C. BARNARD read a memoir on the quantity of oxygen contained in the venous blood of glandular organs during functional action and during repose, and on the employment of oxide of carbon for determining the proportions of oxygen in the blood.

M. Le Baun Seguir detailed the result of his *experiments by means of the apparatus for artificial incubation*. This apparatus consists of a central stove, (poêle,) surrounded by a number of nests, each covered by a caoutchouc bag, connected with the stove by two tubes of the same material. The water is warmed in the stove by charcoal, the combustion being regulated by the "pyrostat sores;" the liquid circulates incessantly from the stove to the nest and back again, to take up the little quantity of heat dispersed in the incubation. The circular movement continues as long as there is any charcoal in the apparatus. The capacity of the charcoal receiver has been so calculated

as to provide for combustion for twelve hours. This stove was surrounded by eight nests, each containing twenty-four eggs.

At first M. Le Baun Seguir found that the eggs did not receive the humidity from his apparatus which they would have had from the mother, but he entirely met the difficulty by constantly sprinkling water in the apartments where the apparatus was fixed, and then the young came out of the eggs perfectly developed. [This precaution has also been found necessary in hatching the eggs of silkworms, and our entomologists will recognise the principle in the treatment of their cocoons.]

M. Leon Soubeiran read a paper upon his "Researches into the Structure of the Venomous Apparatus of Vipers." The venom is *Gland compositæ*, like a bunch of grapes. The acini are very distinctly seen dispersed regularly along the excretory canals, like the beard of a feather on the two sides of its stalk, or like the folioles of a pennated leaf. The lobules forming the gland are from six to eight. Towards the middle part of the excretory canal, a little below the inferior edge of the orbit, is an ovoid swelling, which appears to be a sort of reservoir of the venom. This swelling is very visible to the naked eye. It varies much in size, according to that of the individual and the liquid it contains. Under the microscope it is observed to be surrounded by a number of simple follicles, which all terminate in a single mouth in the cavity of this swelling, (*reusement*), and form a special apparatus not hitherto described.

M. L. Soubeiran thinks that the venom is secreted as the animal requires it, (and not contained, as supposed in a special reservoir,) just as the saliva is augmented in secretion during eating. If the liquid secreted does not flow continually by the fang-canal, then it must be that the fang, doubling itself back along the maxillary palate bone, makes a fold in the direction of the conduit, and so closes up the canal by pressing its sides together. When, on the contrary, the fang is unfolded, the fold disappears, and there is then no longer any obstacle to the flow of the venom.

SITTING, September 20th., 1858.

M. CICEONE read a paper on the "Researches into the Maladies of Silkworms," which was corroborative of much that has been previously advanced by M. Guérin-Meneville, and opposed to those of M. O. Quatrefages, on the nature of the spots which are the result of *gattine*.

[This subject is one just now of intense interest in France, in consequence of the magnitude of the interest dependent upon it.]

SITTING, September 27th., 1858.

M. VANNER read a paper upon the "Forces which concur in determining the circulation of the blood." These forces, M. Vanner says, are:—1.—A force primitive and unknown, which we find in the egg before the formation of the heart. 2.—The contractive action of the heart on the blood and arteries. 3.—A general compression, which acts in a sense contrary on the blood in the capillaries and veins.

The rest of the sitting was occupied in deciding a question of literary priority, of no interest to our readers.

C. R. B.

A NATURALIST'S RAMBLE ON THE EXMOUTH COAST.

BY MR. EDWARD PARFITT.

THE other day myself and a friend took the first train, at seven o'clock, a.m., to Starcross, and from thence crossed over by the steam-boat to Exmouth, intending to make our way towards Salterton, along the cliffs, to entomologise and botanise as we went along, my friend being fond of plants, (he knows but very little about them.) Just beyond the beacon at Exmouth is a thicket of brambles, a sort of sedge, below which is a very pleasant walk, extending towards the cliffs, and on the bramble blossoms I captured a splendid ♂ *Andrena florea*, apparently just out, it being in such fine condition: this was a good beginning. A little further on took a beautiful ♀ *Halictus lugubris*; this I consider to be a second brood, as she was not the least worn. On a white washed wall, belonging to the coast-guard station, I took a most beautiful *Elachista*, new to me; it is about the size of *P. Pfeifferella*; it is perhaps a new species. By the side of this wall runs a hedge of *Atriplex portulacoides*, and there is not another hedge or bush near, so I thought it most probable the species was bred from this plant. Well, on we went, till we came to some old lime-kilns, and just by these is a large patch of *Centaurea calcitrapa*, on the flower-heads of which I took *Megachile Willughbiella* and *Saropoda bimaculata*, and just by this place is a pond of fresh water, in which I took *Berosus globosus* and a dozen or so of *Philhydrus melanocephalus*. Leaving this, we moved on towards the high cliffs, and on some bramble blossom I took a specimen of *Halictus sexnotatus* ♂ and *Andrena bicolor* ♀.

The cliffs being rather high, that is from seventy or one hundred feet or more, and the sun was blazing upon us enough to roast us alive, we made our way from this unto a point of rocks which runs out into the sea, which at low water are high and dry. The flat surface of this sandstone rock is carpeted with *Fucus serratus*, and on the sides of the water-worn gullies were scattered over numbers of *Actinea*, all of one species, namely, *Actinea crassicornis*, and its red variety—the latter predominated to a considerable extent. I saw one beautiful greenish specimen which I could not make out. In one of those glorious rock-pools, which Mr. Gosse has so faithfully portrayed, we observed some "odd fish"—some Gobies and a *Cottus bubalis*; (?) I think it was this species, but am not sure. These soon shot away amongst the magnificent fronds of *Laminaria bulbosa*, which hung so gracefully from the sides of this splendid pool; and here and there where the rock projected a little, were growing some *Polysiphonia elongata* and *Ceramium rubrum*, with a patch or two of *Corylina officinalis*, and a few bits of a bright green conferva: this was the drapery which covered

the rocky walls of this beautiful pool. These seen through the clear water in the bright sun-light looked like some fairy-land, and left an impression on the mind which neither of us will soon forget. My friend was so enchanted by this splendid picture, that he was loth to leave it.

Near the cliffs lay some great boulders, which at some time must have fallen from the cliffs, as the waters have worn away the base, and these are worn into queer shapes by the wear and tear of the restless waves. On these it was curious to observe the species, how they kept together; thus on one was nothing else but *Purpurea lapillus*, and on another nothing else but the common *Balanus*, and on another I observed what might be termed the "happy family;" thus *Balani*, *Trochus umbilicatus*, a *Nerite* or two, with a few specimens of *Littorina patula*; and before taking leave of this interesting spot a thought struck me that I had not seen a Zoophyte. Turning to a little shallow pool, I observed a small one, *Laomedea gelatinosa*, with its tiny creeping polypidoms, and bearing their miniature cups. I went down on my knees to see if their little arms were protruding from the tiny urns, but could not see them, so I took out my knife and cut some off, and brought them home to examine the species.

Being well satisfied with our shore visit, we ascended the cliffs, which was rather a difficult operation, but at length we got up, and sat ourselves down to have some luncheon, and view the beautiful scene beneath; and in the distance, just opposite Dawlish, about a mile from the land, lay one of old England's "wooden walls," 'The Blenheim.' After satisfying the 'inner man,' we proceeded along the cliffs, and soon came to a bramble bush or two; here the net went to work again, and took *Sphecodes ephippia* and a ♀ *S. subquadrata*, and a specimen of *Halictus leucopus* ♂(?) The males of *H. leuczonius* were swarming on the brambles and rag-wort flowers. I saw four specimens only of *Colias edusa*, and these were as wild as possible, and directly I attempted to take them, they flew over the face of the cliffs.

Having pretty well tired ourselves, and as it was drawing towards evening, we retraced our steps back to Exmouth, from thence over to Starcross, and by rail home, being well satisfied with our day's excursion, and the collections we had made.

Exmouth, August 19th., 1858.

Tiger Moths.—Last summer I caught a pair of very beautiful moths, some of the Tiger Moths I believe, and having killed them with sulphur matches, found that the hind wings had lost their fine ruby red colour—probably, as they were left in the smoke for some hours, from the sulphurous acid generated. Can you tell me of any method of restoring the colour? I feared the application of an alkali might destroy the bluish black of the other parts of the insect.—CYMRO.

Acherontia atropos.—A fine specimen of the Death's Head Hawk Moth was taken last month by Mr. J. C. Browne, in a field near here, and yesterday a boy brought me three chrysalides of the same moth, which he had found while lifting potatoes.—W. G. GIBSON, Dumfries, October 15th., 1858.

Catocala nupta.—I can confirm what Mr. Crewe says of this insect flying about in the day-time, and fast they do fly. I used to see them thus at East Garston, near Lambourne, Berkshire, some five-and-twenty years ago; starting off, if you approached them, from some grey old lichen-covered barn-door or bridge, to which their grey colour, when the upper wings are closed over the lower, closely assimilates. They always, however, gave me the idea of only flying about thus when alarmed, and not of their own accord for pleasure or food.—F. O. MORRIS, Nunburnholme Rectory, November 2nd., 1858.

Stay at Home.—I have not for a long time seen a more useful paper than the short and homely one with the above title, by Mr. Crewe, in the October number. Every entomologist must agree with him, and say "crede experto." Many is the time one has missed good things, or at all events good specimens, at one's own door, by going to a distance in search of something better. How often too are good specimens wasted, or rather how often have they been, by being dried up before the day is over, though this may be safely avoided by the adoption of the method recommended in the "Aphorismata" published with my "History of British Butterflies." How often too, while going to a distance for "scarce articles," not perhaps after all to be obtained, are the common species that might be caught in one's own garden, or the adjoining lane or field, left until it is too late to obtain good specimens, or any at all, and the cabinet is disfigured by worn-out or badly-set ones, while it might have been set off by fresh and fine ones; little or nothing having been after all gained to make amends, by the acquisition of "Crewe's Catalogue of Rarities," with which the present Mr. Crewe is right in having nothing to do to the disparagement of home treasures.—F. O. MORRIS, October 14th., 1858.

Eupithecia assimilata.—For the last two or three years I have devoted a good deal of time to observing the habits of the larvæ of the genus *Eupithecia*, and a more interesting family it is impossible to conceive. I have bred and taken the larva of some twenty species. I had never seen the larva of *E. assimilata*, and so yesterday I thought I would try if I could not turn up this species in Derbyshire, and following Mr. Logan's advice, I set to work inspecting the black currant bushes in the kitchen garden. I had only been at work half an hour when the dinner-bell rung, but had the satisfaction of taking home a bag of sixteen. I have been at work again to-day, and not without success. Some of the larvæ are still quite small.—H. HARPUR CREWE, Breadsall Rectory, near Derby, October 14th., 1858.

Acronycta alni.—I have just become the fortunate possessor of two pupæ of this rare insect. The larvæ were both found by my father in July, in this parish, (Breadsall,) crawling up some gate-posts. They spun up immediately just on the surface of the earth.—Idem.

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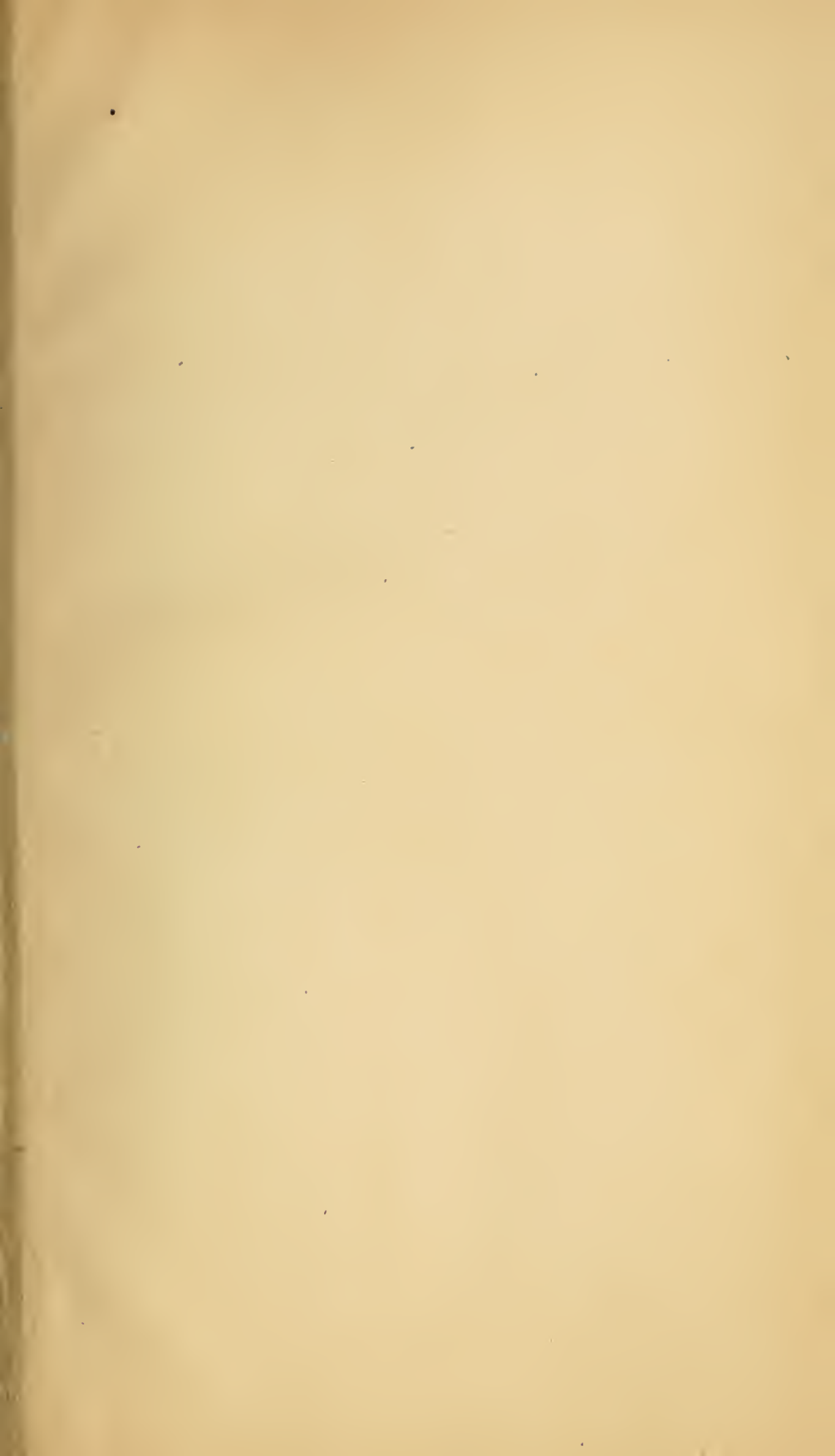
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